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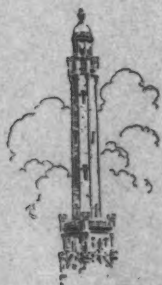
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## Anterior Poliomyelitis in Alberta in 1930

A. C. McGUGAN, M.D.

*Director, Division of Communicable Diseases,  
Provincial Department of Health, Alberta*

ONE hundred and fifty cases of anterior poliomyelitis were reported in the Province of Alberta during the year 1930. A questionnaire was sent to the attending physicians and histories of one hundred cases were obtained. In presenting the information obtained from these histories one recognizes the fact that the 1930 epidemic in Alberta ran the usual course of such epidemics and that the information offered herein can do little more than confirm the findings of investigators who have reported previously on the subject.

However, the unusually high proportion of cases with onset symptoms referable to the digestive system, the use of convalescent serum, and the relatively large number of deaths in individuals in the third, fourth and fifth decades are features that may merit some special consideration.

Those who have read Dr. Jenkins' report of the 1927 epidemic in Alberta may recall that the outbreak centred around the city of Edmonton,—some eighty per cent of the reported cases occurring north of Red Deer. Apparently some immunity was developed in this area for in the 1930 epidemic over sixty-five per cent of the reported cases occurred in Calgary and that part of Alberta south of Red Deer.

Table I shows the seasonal and geographic distribution of the disease in the Province during 1930, with the peak in the late summer and fall.

It will be noted that ten cases (approximately seven per cent.) occurred during the months of January, February and March. However, in two of these cases which came directly under the author's observation, death had intervened before a diagnosis was established. Both cases were reported as poliomyelitis to the Provincial Board of Health.

During the months of June and July there was a widespread occurrence of a rather vague illness in the province described as "summer diarrhoea," "summer influenza," etc. The illness was manifested

TABLE I  
POLIOMYELITIS IN ALBERTA, 1930  
CASE DISTRIBUTION BY SEASON AND RESIDENCE

Month	Cities	Towns	Villages	Rural	Total
January.....	..	1	1	3	5
February.....	..	..	..	2	2
March.....	1	..	..	2	3
April.....	..	..	..	..	0
May.....	1	..	..	1	2
June.....	..	1	1	..	2
July.....	2	..	1	1	4
August.....	27	1	9	22	59
September.....	14	7	8	20	49
October.....	9	3	1	8	21
November.....	1	1	..	1	3
December.....	..	..	..	..	0
Total.....	55	14	21	60	150

by headache, slight elevation of temperature, some degree of prostration and rather severe gastro-intestinal disturbance. Pre-epidemic illnesses of a similar nature have been referred to in several instances in the literature on the subject of poliomyelitis. Whether these cases were abortive attacks of poliomyelitis, or had any relation to the epidemic that followed is a matter of conjecture as the cases were quite mild and a physician was not usually called. In one of the above-mentioned cases an appreciable paralysis of the right anterior tibial muscle was noticed by the father, a physician, some three weeks after the acute stage. After a few weeks of absolute physiological rest, complete muscle function appeared to be restored.

The diagnosis of the two cases in the 45-59 age group was somewhat doubtful.

TABLE II  
POLIOMYELITIS IN ALBERTA, 1930  
DISTRIBUTION ACCORDING TO AGE AND RESIDENCE

Age Groups	Cities	Towns	Villages	Rural	Total	Percentages of total
0-1.....	1	..	..	..	1	1
1-4.....	10	5	7	15	37	25
5-14.....	32	5	12	32	81	54
15-24.....	10	1	2	12	25	16
25-44.....	2	2	..	1	5	3
45-59.....	..	1	..	..	1	1

*Multiple Cases in Families*

In Dr. Jenkins' review of the 1927 epidemic there were 14 instances of multiple cases in 189 families involved. There were 33 other families in which diagnosed cases of poliomyelitis were associated with other cases of illness, the symptoms of which suggested the acute stage of poliomyelitis.

In the 1930 epidemic there were 138 families involved. Of these there were ten instances of two definitely paralytic cases in a family and one instance of three cases in the one family. In many families where a diagnosed case of poliomyelitis existed and where one could obtain a satisfactory history there was an account of one or more cases of illness, the symptoms of which were usually very similar to those associated with the acute stage of the disease.

In thirty-six of the established cases there was a history of contact with a previously diagnosed case.

The incubation periods varied from ten to fourteen days.

*Onset*

The text-book types of onset—"influenza-like" and an onset "with symptoms referable to the gastro-intestinal tract" were the two most common types.

Headache occurred in 67 per cent of the cases in this series and general malaise in 55 per cent. Fever was a constant symptom and ranged from 99.3°F. to 104°F., with an average of 102°F. Coryza was present in 16 per cent of cases. There was complaint of sore throat in 23 per cent of the reported cases. Bronchitis was present in 8 per cent of cases. Among the symptoms referable to the digestive system, nausea was present in 16 per cent of all cases. Vomiting occurred in 37 per cent of the cases. Diarrhoea was reported in 14 per cent of cases.

Among the earlier symptoms referable to the nervous system, irritability was present in 33 per cent of cases, drowsiness in 30 per cent and restlessness in 28 per cent. Kernig's sign was reported positive in 27 per cent of cases and doubtful in 4 per cent. Nuchal pain on flexion of the head was present in 49 per cent of cases and rigidity in 45 per cent. Localized muscle tenderness was a complaint in 18 per cent of cases. Those reporting reflex responses described the superficial as being lost early in the disease. The deep were exaggerated in the earlier stages of the involvement of the nervous system and lost in the later stages.

*Paralysis*

The onset of the acute paralytic stage occurred in from one to five days after the initial onset symptoms. One case was reported where paralysis was the initial manifestation of illness.

Reports regarding the paralysis in the acute paralytic stage and the

extent of residual paralysis are so incomplete that little information of value can be given. The following table offers some information regarding the acute stage.

*Paralysis—Types and Muscle Groups Involved*

Landry ascending type.....	2
Muscles of respiration.....	6
Generalized and complete.....	6
Muscles of deglutition.....	8
Palatal paralysis.....	2
Right leg.....	14
Left leg.....	10
Right arm.....	7
Left arm.....	7
Facial muscles.....	1

The epidemic of 1930 in Alberta was of a very severe type. Thirty deaths were reported as due to poliomyelitis of the total of 150 reported cases,—a case-fatality of 20. The death rate from this disease for 1930 was 4.5 per 100,000 of population. Table III shows the distribution of the deaths according to sex, season and age.

TABLE III  
POLIOMYELITIS IN ALBERTA, 1930  
DISTRIBUTION ACCORDING TO SEX AND RESIDENCE

Sex	Cities	Towns	Villages	Rural	Total
Male.....	29	10	13	36	88
Female.....	26	4	8	24	62

*Deaths*—Male, 16; female, 14.

*Season*—Jan., 4; Feb., 1; March, 0; April, 0; May, 1; June, 0; July, 4; Aug., 8; Sept., 8; Oct., 2; Nov., 2; Dec., 0.

*Age*—0-1 years—1; 1-4 years—3; 5-14 years—14; 15-24 years—9; 25-44 years—2; 45-59 years—1; total—30.

*Use of Immune Serum*

"Convalescent" serum was obtained from various donors throughout the province. Donors were paid twenty-five dollars and travelling expenses amounting to a total of \$1,320.00. Through the co-operation of the Department of Health at Calgary, the orthopedic staff of the University Hospital and the Provincial Laboratory, 7120 cc. or 470 doses of the serum were obtained. Three hundred and forty-two were distributed throughout the province and reports were received from 39 cases where the serum was used. Eight reported that the serum had been given long after paralysis had developed. Five others reported

results as questionable, poor or no results at all. Twenty-six described the results as either immediate, excellent or good.

In estimating the value of the convalescent serum one must remember that to be of value it should be used as early in the course of the disease as possible. Early in the onset the diagnosis is obscure and the serum may have been used on a patient that was not suffering from poliomyelitis. Then, too, some thirty per cent of the acute cases usually recover from the acute paralytic stage without residual paralysis. One may, therefore, be crediting the serum with results not obtained. However, over 80 per cent of those who received the serum early made a satisfactory recovery.

#### *Cerebro-Spinal Fluid Findings*

A large number of the cases were treated outside of hospitals and the record of cerebro-spinal fluid examinations is incomplete. Twenty-five per cent of those cases on which a report was obtained, reported the cerebro-spinal fluid findings. The cell count ranged from 10 to 110 per cubic millimetre with a very high proportion of lymphocytes. The albumin and globulin content of the cerebro-spinal fluid was increased early in the course of the disease.

#### *Control Measures*

Patients were quarantined for twenty-one days from the date of onset and contacts for fourteen days from the date of the last exposure. Concurrent and terminal disinfection in accordance with instructions issued from the Department of Health were required.

An educational campaign was undertaken by the Department. The press gave its active co-operation. Representatives of the Department of Health assisted in the diagnosis of the more obscure cases on request of the attending physician.

#### *Treatment of Paralyzed Cases*

The Provincial Special Hospital now under the control of the University Hospital has been in operation since January of 1928. This is a sixty-bed hospital which provides orthopedic care for children affected with paralysis.

The staff consists of an orthopedic surgeon and an assistant, also a specialist in orthopedic surgery, a superintendent of nurses, her assistant, a head masseuse, a number of graduate nurses and a secretary. A school teacher is also engaged.

# Tuberculosis in Hamilton\*

JAMES ROBERTS, M.D.

*Medical Officer of Health*

THROUGHOUT Canada and the United States the decline in the tuberculosis death rate has been marked and continuous. In Hamilton, Ont., it has been phenomenal, the rate falling from 121 per 100,000 of population in 1905 to less than 40 in 1930.

The causes leading everywhere to the astonishing decrease in the mortality from this disease are manifold, and the beneficial effects of the nation wide campaign against its ravages have been felt by the entire population, regardless of age, sex, colour, occupation, geographical situation, urban or rural residence or economic status.

From newspaper records in my office it would appear that until 1873 there was in Hamilton no legally constituted authority responsible for the care of the public health. An editorial in the *Evening Times* of July 14th, 1873, makes reference to the recent appointment of such a body. The editor calls attention to his own remarks of the previous Saturday in which notice is drawn to the filth in the public alleyways. "Nor would it be permitted if we had a well-organized Board of Health, who should have no other duties to perform than those of providing the best sanitary regulations, and seeing that they are efficiently carried out everywhere and in all cases." "We are happy" he goes on to say, "to be able to correct our error, for we find that the duties of the Board of Health have been recently removed from the many other duties of the Board of Works, and that an independent and distinct Committee has been appointed by the City Council, with no other duties to perform than those properly belonging to the Board of Health. In the same article we also suggested that a medical officer should be attached to the Board. We are glad to find that the Board have forestalled our suggestion on this head by the appointment of our hospital and city physician, Dr. C. E. O'Reilly, as medical officer."

The year 1873 is the earliest date concerning which it has been possible for me to obtain information in regard to the amount of tuberculosis then existing. As there was neither provision for the reporting of cases nor investigation of any kind undertaken to ascertain the prevalence of the disease, we are limited entirely to the monthly tabulation of deaths by the Medical Officer of the Health Committee in endeavouring to arrive at the actual facts in regard to its incidence during this embryonic period of preventive medicine.

For the last seven months of 1873, substituting the January deaths of the succeeding year in the place of those for December which are not recorded, we have a total of 37 deaths distributed as follows:—

\*Read before the Hamilton Medical Society at the Mountain Sanatorium, October 14th, 1931.



June.....	4	October.....	1
July.....	6	November.....	7
August.....	8	January (1874).....	6
September.....	5		

The 37 deaths, therefore, in a population of 30,000 persons which is the estimate available for our calculation, represent an average of  $5 \frac{2}{7}$  deaths monthly or an annual toll of 64 from this one cause alone, and a mortality of 213 per 100,000 of population, in contrast with a rate of 39.3 per 100,000 as shown in our annual report for the year ending October 31st, 1930.

### *The Establishment of the Mountain Sanatorium*

Hamilton was the first municipality in Canada to establish a municipal sanatorium. Previous to 1905 there had been an effort on the part of several public spirited citizens to arouse interest in the establishment of such an institution. The Muskoka Free Sanatorium which had been opened at Gravenhurst for the treatment of the tuberculous poor had accommodation for only a small percentage of those who were in urgent need throughout Ontario of the benefits to be derived from the regimen of rest, proper food and fresh air which it offered.

As I look back over the period of twenty-six years which has elapsed since the founding of the Mountain Sanatorium, it is difficult for me to find a parallel to the enthusiasm, determination and persistence which was exhibited by the ardent workers who took part in the accomplishment of this praiseworthy project. The choosing of a site and the erection of the first building to accommodate some twenty patients was for those pioneer days of public health endeavour a stupendous achievement, and too much cannot be said in commendation of those who were responsible for the success of the undertaking. From a miniature beginning, the "San", thanks to the untiring efforts of Dr. Holbrook, has grown to a great hospital, the work of which has won outstanding recognition from ocean to ocean.

### *Legislative Enactments*

The advisability of reporting tuberculosis as a communicable disease was, during the concluding years of the last century, the storm centre around which considerable discussion of a not always friendly character took place. That Hamilton was in the forefront in the promotion of advanced legislation in this matter is shown by the insertion in the Public Health By-Law, November, 1902, of a section requiring physicians to report tuberculosis to the Health Department.

The change of opinion with regard to this question of compulsory notification during the last twenty years is somewhat remarkable. In 1898 Sir Richard Thorne, Medical Officer to the Local Government Board for England, in his well known Harben Lectures on the Admin-

istrative Control of Tuberculosis, stated that his views on this subject were "at variance with those of some of the distinguished members of the public health service of his country." He further advanced arguments in support of his opinion that the compulsory notification of phthisis was not advisable, which completely stopped for a time the adoption of this preventive measure. A few years later Byron Bramwell in a series of lectures published during July and August of 1902, in the *Lancet*, considered in detail the arguments of Sir Richard Thorne and proved to the satisfaction of his readers that they contained little of real value.

The number of known cases in any community in relation to the average number of deaths for the most recent period of five years is usually set down as four or five, although an intensive search will, in many communities, reveal an aggregate of cases far in excess of this estimate.

For the five year period 1920-1924 there was an average of 155 cases reported, while from 1925 to 1929 there was a decline in this total to 118. According to the standard above mentioned the actual number of cases is probably 300 to 350, or in other words approximately one third are reported. At the present time physicians report about one third of new cases, nurses another third, the remainder coming voluntarily to the dispensary or being recommended by friends or relatives.

Regulations enabling the Medical Officer of Health to hospitalize all cases considered a menace were passed by the Provincial Board of Health in 1912. In the case of an indigent patient whose removal has been so ordered, the expense of such removal and the cost of maintenance of such patient are to be paid by the municipality where the patient has had his usual place of abode, and if the patient has no permanent place of residence, or his usual place of abode cannot be ascertained, then the cost of his removal and maintenance are to be paid by the municipality whose Medical Officer of Health or Local Board of Health has ordered such removal. Through the assistance and able co-operation of Mr. McMenemy, the Relief Officer, this section has been of signal service in helping the Department to maintain a proper supervision and control over cases which might otherwise become a potential means of disseminating disease.

In 1903 a section was added to By-Law No. 316 by the Municipal Council prohibiting spitting on sidewalks, in public places and vehicles.

#### *Downtown Clinics*

The Downtown Dispensary was opened in 1908. This was brought about by the initiative and foresight of the Hamilton Health Association and its activities were taken over by the Health Department in 1921. A study of the volume of work done, shows an increase in the clinic attendances of new patients from 530 in 1920 to 840 for the statistical year ending October 31st, 1930. While there has been a

continued increase in the total attendances from year to year with the exception of 1922 and 1923, the active cases discovered have decreased from 126 in 1920 to 48 last year, or in other words the percentage of such cases has, during the last decennial period, declined from 23 in 1920, to 11 in 1925 and to 5 for 1930.

A second diagnostic clinic was opened at the General Hospital in 1927 under the direction of the physicians at the Mountain Sanatorium. Here facilities for X-Ray are available and the house physicians of the hospital are given an opportunity to receive a training in the early signs and symptoms of tuberculosis which they otherwise would not be able to obtain. The nurse in charge of the anti-tuberculosis work of the Health Department is in attendance at these weekly clinics.

The rapid growth of the city's population and the extension of its borders in every direction has rendered it necessary for the district nurses who do generalised nursing to take over the tuberculosis work of their individual districts. The nurse to whom for several years this work was specially assigned, still maintains a supervising relation to each of the district nurses, and in addition is in charge and responsible for the conduct of the diagnostic clinics.

#### *Hospital Beds*

Since 1920 the number of beds available at the Mountain Sanatorium has risen from 319 in 1920, including military beds, to 460 in 1930, which total also includes those for the accommodation of tuberculous veterans. This number is far in excess of the minimum requirement of one bed for each annual death, but that this requirement is not only a minimum in estimation but in fact can be amply demonstrated by the waiting lists at the various hospitals which have been established throughout the Province: The grand total of hospital days has increased from 59,407 in 1920 to 158,958 in 1930, and the average stay per patient has risen from 171 to 213 days.

#### *Sickness and Social Service*

The annual budget for the relief of tuberculosis sufferers in need of material assistance reaches a considerable sum. In general it may be stated that all families in destitute circumstances in Hamilton may obtain sufficient assistance to maintain a fair standard of physical health by application to any of the several agencies engaged in social service work. The actual amount expended by the City Relief Department for maintenance of indigent and semi-indigent patients in the Mountain Sanatorium has risen from \$1,086 in 1905 to \$87,470 in 1930. If the bread winner of a family falls ill with tuberculosis and is obliged to take sanatorium treatment he can make sure that his family will receive care in the way of food, clothing and shelter.

One organization deserving special mention in this connection is The Samaritan Club, and in reference to its work among tuberculous

families our visiting nurse in her report to the Board of Health last year affords us a glimpse of the splendid work which is being accomplished by this club. "Only by visiting these homes" she says, "can one realize the great need for help and adjustment when either parent is stricken with tuberculosis. Such cases are referred to the Executive Secretary of the Club, whose co-operation and ready help are greatly appreciated. During the last year 93 of our families received assistance from this organization. Extra milk, groceries, fuel, rent, and clothing were provided where needed, and fifty families who otherwise might have had a desolate Christmas, were given hampers. Twenty mothers and 32 of the smaller children were sent to the Mothers' Rest Camp on Lake Simcoe for a period of rest and sunshine."

#### *Laboratory Examinations*

Since 1920 the year previous to the taking over of the Downtown Dispensary, the number of sputum examinations made at the City Laboratories has more than doubled, from 659 in that year to 1,384 in 1930. The percentage of positives has decreased with fluctuations from 15.4 to 12.8 for last year.

#### *Bovine Tuberculosis*

The tuberculin testing of dairy herds, of which there are 704 shipping milk to our city, has been carried on to a greater or lesser extent for some years. The latest figures at hand show that out of a total of 8,369 cows comprising these herds, 6,407 have been tested by the inspectors of the Federal Department of Agriculture and an additional 428 by privately employed veterinarians, so that in all 82 per cent of the cows which supply our daily consumption of 15,000 gallons have been subjected to the tuberculin test.

Pasteurization from a commercial standpoint dates back to 1903 when the flash method was first employed. Since 1915 the method of holding for a period long enough to kill the tubercle bacillus has been practised by the majority of distributing plants and was made compulsory by the City Council in 1928.

Pasteurization has undoubtedly been the means of eliminating much glandular and bone tuberculosis in early childhood.

#### *Summary Conclusion*

Many factors have been operative in reducing the prevalence of tuberculosis in our midst and in bringing our death rate to its present lowest level. The campaign in Hamilton against this disease has been successful in a measure exceeding the expectations of the most sanguine among those who a quarter of a century ago played a part in its inception. Much of the life saving has been accomplished by the dissemination of knowledge concerning the value of sunlight, fresh air, rest and nourishing food whereby the resistance of the individual is

raised and his liability to infection decreased. Hundreds of cases here and elsewhere have been arrested and gone on to cure which in the pre-sanatorium days of treatment would have succumbed with scarcely a struggle.

Public health authorities and voluntary agencies have established clinics and sanatoria which have played a wonderful part in the education of the laity and have enabled physicians more and more to learn the technique of diagnosis and treatment. Looking to the future we must seek to treat the child, thereby saving the adult. The establishment of preventoriums, open air schools or open window rooms, and the provision of adequate nutrition for pre-school and school children are among our most urgent needs.

Industry should be regulated to enable the working man and woman to take note of the early signs of tuberculosis so that he or she may stop work long enough to bring about an arrest of the disease and may then return to an occupation and environment suitable for making a living. To treat a patient for months in an institution until recovery and then allow him to go back to the same conditions which brought about his infection is not only an economic folly but a social injustice. "At present", says a prominent social worker in England, "an enormous amount of money is wasted in sending persons to the sanatorium for absurdly short periods of time." We know from daily observations that the presence of advanced tuberculosis in a congested home means, nearly always, the infection of other members of the family, so that institutional care of advanced cases becomes an absolute necessity.

Co-operation and mutual understanding among the various agencies, official and voluntary, engaged in the battle against the tubercle bacillus is necessary if we are to hold and consolidate the gains we have already made. These working in harmony should seek to obtain for every child a happy and healthy childhood. If we are successful in safeguarding the health of the child, the health of the adult is assured.

The closing words of that remarkable monograph on typhoid fever by William Budd, M.D., F.R.S., and written years before the discoveries of Pasteur, are equally applicable to tuberculosis. "This disease not seldom attacks the rich, but it thrives most among the poor. But by reason of our common humanity we are all, whether rich or poor, more nearly related here than we are apt to think. The members of the great human family are, in fact, bound together by a thousand secret ties, of whose existence the world in general little dreams.

"And he that was never yet connected with his poorer neighbour, by deeds of charity or love, may one day find, when it is too late, that he is connected with him by a bond which may bring them both, at once, to a common grave."

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# Carbon Monoxide Poisoning\*

DANIEL NICHOLSON, M.D., M.R.C.P.

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THERE are two methods of coping with the danger of carbon monoxide poisoning. The first is, by mechanical arrangements, to make it impossible for a person to inhale it. The second is education of any who may come in contact with this gas, to its danger.

The education campaign has the advantage that it may be instituted at once and it has a definite value. But because memory is short and many are careless, the results will be imperfect. Mechanical removal of the gas promises the greatest ultimate freedom from poisoning.

Perhaps the greatest source of danger is from the exhaust gas of the automobile. To start a car in cold weather the gas mixture needs to be rich. This produces as much as 8 per cent carbon monoxide in the exhaust gas and if the car is started and warmed up in a small closed garage of 2000 cubic feet, the air becomes dangerous in less than five minutes. It may produce unconsciousness in ten minutes and death within half an hour.

Much effort is being spent to invent an apparatus which will overcome this danger. Dr. M. R. Hutchinson, who was an engineer in the Edison factory, has devised a dashboard dial that indicates the percentage of carbon monoxide in the exhaust gas. It depends on the fact that the electric resistance of platinum wires increases as they become heated and this shunts the current through a meter which indicates the amount of carbon monoxide pouring out of the exhaust. The platinum is specially treated to act in the same manner as the sponge platinum used for the type of gas lighter which begins to glow when held over a gas jet. There is a pipe lighter which works on the same principle. Let us hope that this device will be perfected in the near future and become standard equipment on all cars. It will not abolish monoxide from the exhaust gas but it is a splendid warning. There is another reason why this meter will attract much attention. It tells the percentage of fuel wasted and so will make for economy by enabling the operator to cut down on mixtures that are too rich.

The General Motors Research Laboratories have devoted considerable study to the elimination of carbon monoxide from engine exhausts<sup>1</sup>. They regard as the most attractive method, complete burning up of the carbon in the fuel into carbon dioxide. At present the obstacles in the way are, first, that the best power is given by mixtures somewhat rich in fuel (complete combustion produces a lazy engine which people do not like to drive); second, in multi-cylinder engines the distribution of the fuel is not uniform and the cylinders receiving the rich mixtures produce much monoxide.

\*Presented at the Laboratory Section of the Canadian Public Health Association, 20th Annual Meeting, Regina, June, 1931.



The second means of eliminating carbon monoxide is to burn it up in the exhaust gas by adding more air and igniting the mixture. This requires a high temperature and when only one or two per cent of carbon monoxide is present in the exhaust gas the mixture cannot even be ignited at a temperature over 1000°F. Absorbing the gas is not practicable because of the great weight of the absorbent. Burning the mixture catalytically is a hopeful solution of the problem but the difficulty at present is that high temperatures, sulphur and other substances impair the catalysts. It is said that Professor Frazer of Johns Hopkins University has overcome many of the difficulties and we may look forward to a useful contribution from him on this problem.

There are to-day few other conditions under which acute carbon-monoxide poisoning is a life hazard. It is now a rare occurrence for gas jets to be blown out or the pressure to lower temporarily so that the flame goes out and the unburned gas fills the room. In many gas plants butyl mercaptan is added to the gas giving it an extremely foul odour which acts as a warning.

Large amounts of carbon monoxide may occur in blast furnace stack gas, from explosions in mines, in blasting procedures or in warfare if explosives go off in enclosed spaces.

Chronic poisoning may occur among workers (1) in automobile repair garages, (2) in traffic tunnels, (3) in houses with slowly leaking gas pipes, (4) in numerous industrial plants where fires or intense heat are used with inadequate ventilation. Here the air may contain 0.02 to 0.05 per cent (2 to 5 parts in 10,000) and 20 to 40 per cent saturation of hemoglobin occurs in 3 to 6 hours. Breathing fresh air reduces the carbon monoxide hemoglobin to 10 per cent or less in 4 to 5 hours<sup>2</sup>.

#### PHYSIOLOGICAL ACTION OF CARBON MONOXIDE

Hemoglobin has approximately 300 times as much affinity for carbon monoxide as for oxygen. Therefore, air containing 0.03 per cent (3 parts in 10,000) will saturate 30 per cent of the hemoglobin in 6 hours. Air containing 0.5 to 1 per cent carbon monoxide will produce 75 per cent saturation of the hemoglobin in two to five minutes. The maximum saturation of hemoglobin under ordinary conditions is 80 per cent. Under such a state only 20 per cent or less would be free to carry oxygen.

The hope of recovery of the patient nearly fatally poisoned lies in the fact that the union between carbon monoxide and hemoglobin is not absolutely firm and the carbon monoxide in the blood of a patient who has been taken into fresh air, is gradually displaced by oxygen. The high concentration of carbon monoxide in the blood, according to the law of partial pressures, flows out into the air which contains none. Each hour of such treatment lessens the carbon monoxide content of the blood by 30 to 50 per cent. Thus the initial loss is quite rapid and

the last traces go slowly. Inhalation of 95 per cent oxygen and 5 per cent of carbon monoxide reduces the elimination time to one quarter of that required when air is breathed. Blood transfusion is not indicated. Small multiple hemorrhages and œdema of the brain are common and may produce neurological symptoms after all carbon monoxide has been discharged. Chronic poisoning may produce a polycythema. Table I summarizes the symptoms produced by various concentrations.

TABLE I

## INTERPRETATION OF RESULTS

Percentage of Carbon Monoxide Hemoglobin	Resulting Symptoms
0 to 10%.....	No symptoms.
Approximately 25%.....	Severe throbbing headache, nausea and weakness. The symptoms are absent if poisoning is rapid.
" 50%.....	There is a state resembling drunkenness. The affected person is not aware of his impending danger. There is increased respiration which may become irregular. The heart action is depressed.
" 60%.....	Coma may occur with intermittent convulsion.
" 70 to 80%.....	Respiratory failure; death usually occurs.

When normal blood is treated with water, sodium hydroxide, copper sulphate or tannic acid the colour is readily changed, whereas if blood containing carbon monoxide is so treated the reddish colour remains due to the marked affinity of carbon monoxide and hemoglobin.

*Class Demonstration of Reactions*

Obtain 10 cc. of blood from a vein in the arm. Add 2 drops of 20 per cent potassium oxalate and shake to prevent clotting. Place half of this blood in a wide test tube and bubble illuminating gas through it for 2 or 3 minutes. This will saturate 50 to 75 per cent of the hemoglobin with carbon monoxide. The untreated half of the blood may be used as a normal control.

## DIAGNOSTIC TESTS

On account of the slight colour change shown by blood with 30 per cent or less of its hemoglobin content saturated with carbon monoxide it is necessary to treat normal blood similarly to the blood being tested and compare the results.

*Simple Qualitative Test*

Measure out by means of a pipette exactly 1 cc. of the venous blood to be tested and add it to 100 cc. of water. Treat exactly 1 cc. of normal blood in the same manner. After 10 minutes compare the resultant colours, placing them in test tubes 5 to 10 mm. ( $\frac{1}{4}$  to  $\frac{1}{2}$  in.) diameter and holding them up to a light. Blood containing carbon monoxide has a definite pinkish red colour in contrast to normal blood

which appears yellowish red. This contrast in colour is not marked with blood containing less than 20 per cent of carbon monoxide but the blood containing over 50 per cent when diluted shows a decided pinkish hue. This test may be done on blood from the finger tip by filling the 20 cu. mm. Sahli hemoglobin pipette, diluting it in 2 cc. of water and comparing in a small ( $\frac{1}{4}$  in.) test tube with normal blood similarly treated.

#### *Quantitative Method*

The most convenient quantitative method is the pyrotannic reaction as devised by Sayers\*. The technique is as follows: Collect 0.1 cc. of blood obtained from the finger tip of the patient and dilute it to 2 cc. with water by means of the special pipette. To this diluted blood in a small test tube ( $\frac{3}{8}$  in. diameter) add, by means of the special measuring spoon supplied, 40 mgms. of powder made up of equal parts of tannic acid and pyrogalllic acid. Invert the tube to mix and let stand 15 minutes. Normal blood so treated produces a light brown colour; the more carbon monoxide present the more intense is the red. To determine the percentage present compare with the standards.

This method is extremely rapid and convenient. The outfit is self-contained and compact; all apparatus, reagents and standards are contained in a case 10 by 2 by 4 inches. The standards do not exactly match the colours obtained by treating blood solutions, therefore, it is impossible to make a match within 10 per cent and one cannot be certain of amounts less than 20 per cent. A control test should also be done on normal blood to make certain that small amounts are actually present. However, the convenience of the apparatus outweighs the drawback of lack of accuracy. Considerable changes in amount of carbon monoxide occur in the blood over a short period of time.

Without the apparatus, this reaction may be applied as a qualitative test using the above mentioned proportions of blood and reagents and employing normal blood as a control.

Of all the chemical tests tried I have found the above outlined tests the most satisfactory. They are more definite than the spectroscopic test.

The Van Slyke & Neil gasometric method<sup>3</sup> is a quite accurate quantitative test but requires the elaborate glass Van Slyke apparatus and considerable skill in operating it. Much the same criticism applies to the spectro-photometric method.

<sup>1</sup>T. A. Boyd: Personal communication.

<sup>2</sup>Sayers: Review of Carbon Monoxide Poisoning, U.S. Pub. Health Bull. 1930, No. 195.

<sup>3</sup>Van Slyke and Neil: Blood Gases, Jour. Biol. Chem., 1923, 61, p. 562.

\*Suitable apparatus may be obtained from the Mine Safety Appliance Co., Pittsburgh, Pa. Price \$30.00.

# Le Bien-Être de la Maternité et de l'Enfance

(Rôle de l'Officier médical)

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**D**EPUIS un quart de siècle, la maternité et l'enfance ont été dans notre pays, l'objet d'une attention publique toujours croissante. Avilis, méprisés par les anciennes civilisations, la mère et l'enfant sont entrés dans leurs droits sociaux respectifs accompagnés d'une sympathie presque universelle. De nos jours, ils sont le thème favori de nos gouvernants et de nos économistes; nos sociologues et nos moralistes en ont fait depuis la grande guerre le sujet par excellence de leurs dissertations les plus variées. On a compris enfin que l'avenir d'une nation, le développement économique et les destinées d'un pays, ne peuvent se trouver ailleurs que dans la protection d'une maternité féconde et dans la sauvegarde de l'enfance.

Pour avoir trop longtemps ignoré ce principe élémentaire de saine sociologie, notre siècle. . . civilisé aura de graves responsabilités à porter devant le tribunal de l'histoire.

L'oeuvre accomplie jusqu'à date pour le bien-être de la maternité et de l'enfance est sans doute considérable et tout à la gloire de ceux qui en ont été les pionniers. Mais, n'est-il pas vrai que le chemin parcouru dans cette bonne direction est bien court comparé à celui qui reste à parcourir?

Si le taux de notre mortalité infantile a baissé d'une façon remarquable depuis 25 ans, il n'en reste pas moins vrai qu'il est encore très élevé. La vérité de cette assertion ne fait aucun doute pour celui qui se donne la peine de comparer nos statistiques démographiques avec celles de certains pays d'outre-mer. Durant la grande guerre, un soldat dans les tranchées avait huit fois plus de chances de survivre qu'un de nos bébés dans son berceau; de nos jours, un adulte de trente ans est plus certain d'atteindre sa 90ième année qu'un nourrisson, ses douze mois. Plus de 22,000 enfants de 0 à 1 an trouvent chaque année une mort prématurée au Canada; le nombre des embryons à lui seul est près de 7,000. Si à ces chiffres, nous ajoutons celui des 1,300 mamans que nous perdons chaque année à l'accouchement, nous arrivons au triste bilan de 30,000 vies qui disparaissent tous les douze mois de notre actif national.

S'il fallait qu'une catastrophe quelconque, explosion, incendie, que sais-je, vienne soudainement produire autant de pertes de vies, on verrait la population dans les affres du délire réclamer un enquête, établir les responsabilités et châtier les coupables. Pourtant, le peuple,

à quelques exceptions près, reste bien calme en présence de cette saignée formidable que nous font chaque année, notre mortalité maternelle et notre mortalité infantile.

Cette attitude indifférente de la masse pour un problème aussi vital dont la solution ne peut venir que de la collaboration de toutes les classes de la société, reste la grande inquiétude des hygiénistes, l'obstacle sur lequel doivent se diriger toutes leurs activités.

Eveiller l'attention populaire, former à tous les degrés de l'échelle sociale une opinion éclairée sur la grande nécessité de sauvegarder par tous les moyens possibles nos mamans et leurs petits, c'est là une tâche aride et colossale, mais que tout officier médical a le devoir impérieux d'entreprendre lorsqu'il est appelé à la direction d'une de nos unités sanitaires de comtés.

Comment se réalisera en pratique, dans un comté rural, un programme d'aussi vaste envergure? C'est ce que je vais essayer d'établir dans les lignes qui vont suivre.

A l'origine de notre mortalité infantile et de notre mortalité maternelle, nous trouvons plusieurs facteurs dont l'importance ne saurait être discutée. Ils sont identiques d'ailleurs à ceux que les pays Scandinaves et la Nouvelle-Zélande ont eu à contrôler pour arriver aux succès enviables qu'on leur reconnaît dans le domaine de la conservation de leur capital humain. Il faut mentionner premièrement—l'ignorance des mères de famille et du peuple en général pour tout ce qui concerne l'hygiène:—2°, certains préjugés associés à une sorte de fatalisme dont la source nous est mal connue mais qui paraît pousser des ramifications nombreuses dans les siècles non civilisés:—3°, de mauvaises conditions économiques:—4°, l'incompétence pour ne pas dire l'ignorance inexcusable d'un certain nombre de médecins en matière d'obstétrique et de puériculture.

La connaissance approfondie de ces causes est, pour l'officier médical, d'une valeur exceptionnelle. Elle détermine l'orientation de toutes ses activités. On voit tout de suite que son champ d'action ne peut être ailleurs que sur le terrain de l'éducation. Il faut se rappeler toutefois, que si le rôle de l'officier médical est d'enseigner au peuple les préceptes de l'hygiène, il lui faut, tout comme le laboureur qui rêve une moisson abondante, préparer le terrain où il va jeter la semence de ses principes, élaborer le programme de ses activités et enfin voir à son exécution.

### *Travail Préparatoire*

Pour pouvoir conduire à bonne fin sa campagne d'hygiène éducationnelle, l'officier médical doit réaliser qu'il lui faut, comme tout serviteur du public, revêtir le manteau du gentilhomme. Comme la femme de César, il doit être audessus de tout soupçon. Sa conduite ne doit laisser prise à aucune attaque, aucune critique, s'il veut s'imposer à la population. Seul le vernis que lui donnent les qualifications d'un



diplôme universitaire, ne suffit pas à révolutionner les idées populaires en matière d'hygiène. La connaissance approfondie de la mentalité de chaque région, le tact, la discrétion, la patience et un inlassable dévouement sont autant de qualités essentielles que l'officier médical doit apporter dans l'exercice de ses fonctions quotidiennes. S'abstenir de toute intervention dans la politique municipale, provinciale ou fédérale doit être la ligne de conduite non seulement du médecin de santé mais de tous les membres du personnel d'une unité sanitaire.

Avec le prestige reconnu que lui donnent toutes ses bonnes notes, l'officier médical pourra se présenter sans crainte chez les autorités civiles et religieuses et obtenir dans l'oeuvre qu'il poursuit leur bienveillante collaboration. A celle-ci, il devra joindre la sympathie des corps enseignants de même que celle des corporations scolaires. De toute nécessité il lui faut aussi acquérir le concours si important de la profession médicale. Il devra également, par toutes les ressources dont il peut disposer, intéresser la presse à son oeuvre. Les associations de charité et de bienfaisance auront toujours chez lui un accueil des plus cordiaux. Il lui faut en un mot l'aide de toutes les classes dirigeantes de son comté.

### *Programme*

Il est d'une importance capitale pour le succès de toute entreprise, qu'on y apporte de l'ordre et de la méthode dans ses moyens d'action. Ceci est particulièrement vrai lorsqu'il s'agit d'une organisation sanitaire dans un comté rural où la population est dispersée aux quatre points cardinaux et où les distances deviennent de graves problèmes à résoudre. Il est du devoir de l'officier médical d'élaborer pour plusieurs mois à venir le programme de ses activités et celui de son personnel. De cette façon, bien des ennuis et des retards seront évités et une somme de travail plus considérable sera accomplie. Les infirmières et l'inspecteur sanitaire, tout comme l'officier médical, doivent savoir plusieurs semaines à l'avance dans quelle localité ils iront et quel travail ils auront à faire. Il faut en effet, que chaque paroisse reçoive sa part respective des bienfaits d'une organisation à laquelle elle contribue financièrement. Les conférences aux mères de famille, aux institutrices, aux conseils municipaux, au public en général, les inspections médicales scolaires, les cliniques de puériculture, les cliniques pre-scolaires, dentaires, antituberculeuses, les classes de nutrition, les visites à domicile, le contrôle des maladies contagieuses, la distribution gratuite des serums et des vaccins, la vaccination gratuite contre la diphtérie, l'envoi des lettres maternelles, la distribution de littérature et de pamphlets, de même que les inspections sanitaires ne seront pas seulement le privilège d'un certain nombre de municipalités. Toutes les paroisses doivent, sans exception, bénéficier de ces faveurs suivant bien entendu leur importance numérique.

Tout en conduisant de front les articles du programme que je viens



de mentionner, c'est aux conférences maternelles, aux cliniques de bébés, aux cliniques pre-scolaires, aux inspections médicales scolaires, aux classes de nutrition et au contrôle des maladies contagieuses que l'officier médical donnera la meilleure partie de son temps et de son énergie.

### *Conférences Maternelles*

L'expérience a démontré que, données par l'officier médical, les causeries aux mères de famille ont plus de succès que lorsqu'elles sont faites par l'infirmière. Celle-ci, par contre, avec ses visites à domicile déterminera très souvent des convictions que le conférencier n'aura pu ébranler. Au moins 2½ jours par semaine lui seront accordés pour cette mission délicate et d'une exceptionnelle valeur.

Annoncée par le curé le dimanche précédent, la réunion des mamans se fera habituellement dans une salle publique ou à l'église du village, de préférence l'après-midi. Dans un langage approprié à l'éducation de son auditoire, l'officier médical rappellera aux mères de famille le rôle sublime de la maternité et toutes les responsabilités qui en découlent. Il leur fera comprendre comment elles peuvent être soulagées du poids et des ennuis de la grossesse par la pratique de quelques principes d'hygiène. Après l'énoncé des symptômes de la grossesse et de sa durée, c'est à l'hygiène personnelle que le conférencier consacra le plus de temps. Le régime alimentaire, la propreté de la peau, le fonctionnement régulier des organes éliminateurs, la carie dentaire, sa signification pour la mère et l'enfant qui doit naître, les moyens de la prévenir et de la guérir devront être expliqués de façon à être compris par toute l'assistance. Il en sera de même du rôle de l'air pur, du soleil, du repos et de l'exercice modéré. Il faut aussi rappeler aux mamans les complications auxquelles elles sont exposées (albuminurie, éclampsie, fausse-couche, varices, pituites, vomissements, crampes, etc.), quels en sont les signes prémonitoires, comment les prévenir et les guérir. L'officier médical doit aussi soulager les appréhensions de certaines femmes sur l'accouchement, combattre leurs préjugés délicatement mais fermement et les mettre en garde contre les conseils si désintéressés des commères ou des voisines mal renseignées.

La santé de l'enfant commence dès le moment de la conception. Elle est intimement liée aux conditions physiques et morales de la mère de même qu'au milieu où celle-ci passera sa grossesse. L'enfant naîtra vigoureux ou misérable selon le soin qu'on aura donné à sa mère pendant qu'elle était enceinte. Ce sont des vérités qu'il faut rappeler aux mères de famille pour combattre certains préjugés qui veulent qu'un enfant arrive dans le monde chétif ou rachitique parce que c'est de famille et que ce sont les lois inéluctables du sort qui le veulent ainsi. Pour d'autres, la rencontre d'une personne infirme ou la vision d'un objet répugnant lorsqu'elles sont enceintes doit fatalement déterminer la même difformité chez leurs enfants. Plusieurs vivent des mois avec cette obsession dont les conséquences peuvent être des plus funestes pour elles-mêmes et pour l'enfant qui doit naître. Il est temps de mettre en pleine lumière le rôle néfaste de l'alcoolisme et de la syphilis chez les procréateurs. On connaît trop aujourd'hui les lois immuables qui président à la génération pour permettre le mariage des débiles et les unions dont les contractants sont trop jeunes ou trop âgés. Cette responsabilité de mettre au monde des êtres qui sont presque irrévocablement destinés à peupler nos prisons publiques ou nos asiles d'aliénés, les hygiénistes ont le devoir impérieux de la rappeler aux parents de même qu'aux autorités civiles et religieuses.

Quand on veut obtenir une race d'animaux de première classe, on a soin de bien choisir les procréateurs. Pourquoi lorsqu'il s'agit des intérêts bien supérieurs de l'humanité ne ferait-on pas la même chose? Ce sont là des arguments que l'officier médical ne manquera pas non plus de présenter dans ses conférences aux hommes mariés. Nous ne vivons pas dans une province où les principes radicaux du contrôle des naissances et de la stérilisation des aliénés aient quelques chances d'être appliqués. Même si les intérêts supérieurs de la morale n'en prohibaient l'essai, la faillite complète que ces théories ont reçue dans leur application aux Etats-Unis, nous en interdirait la pensée. Pour la solution de ce problème, la persuasion par l'éducation fera encore beaucoup plus que toutes les théories subversives. Plusieurs mamans croient que leurs obligations cessent avec le retour de l'enfant des fonds baptismaux: un grand nombre se consolent trop facilement de la mort d'un bébé à la pensée que c'est un chérubin de plus dans le cortège des anges. L'officier médical doit flétrir de toutes ses forces, cette fausse conception du rôle de la maternité. Il aura toujours pour l'aider dans cette tâche la voix sympathique de nos curés.

Depuis  $\frac{1}{4}$  de siècle, nous avons envoyé au paradis environ 250,000 de ces petits anges; notre contribution doit être suffisante. Laissons à d'autres nations le soin de fournir leur contingent à l'armée des élus. Songeons maintenant à l'avenir et aux destinées de notre patrie terrestre.

Tout en laissant à l'infirmière l'initiative de donner aux mamans des démonstrations pratiques sur les soins hygiéniques qui doivent présider à l'accouchement, aux suites de couches et aux bébés naissants, il est du devoir de l'officier médical d'ajouter à ces renseignements le poids de son autorité et de son savoir. Plusieurs femmes meurent des suites d'un accouchement, victimes de leur ignorance et de leur malpropreté. Que certains médecins aient une large part de responsabilité dans la mortalité maternelle, la chose est indéniable. Il ne faut pas toutefois les rendre responsables de tous les péchés d'Israel. D'ailleurs, nous y reviendrons sur ce sujet un peu plus loin. A toutes les phases de leur grossesse, les mamans doivent acquérir la conviction que leur meilleur conseiller sera toujours le médecin de famille. Que de vies pourraient être sauvées chaque année si les femmes enceintes prenaient la bonne habitude de lui faire au moins une visite mensuelle. C'est le rôle de l'officier médical de leur rappeler ce principe élémentaire de sécurité.

#### *Consultations aux Femmes Enceintes*

Après cette causerie, il n'y a rien que les mères aiment autant que les consultations personnelles. L'officier médical doit s'y prêter de bonne grâce. Un conseil approprié, un mot donné individuellement en pareille circonstance, ont souvent plus de succès qu'un long discours. A entendre avec patience la confession de ces femmes, l'officier médical pourra bien des fois soulager des misères morales plutôt que physiques et par là attirer à sa cause leur sympathies et leur convictions. Ce bien caché est peut-être le plus rémunérateur qui soit pour le médecin hygiéniste. Il apporte la perfection à son art par la connaissance des replis où va parfois se loger la misère humaine. Pour atteindre une bonne valeur éducative, ces conférences maternelles doivent avoir lieu deux fois par année dans chaque paroisse. Il serait préférable qu'elles fussent plus nombreuses, mais bien d'autres activités requièrent l'attention de l'officier médical.

*Cliniques de Puériculture*

De tous les travaux dirigés par le médecin d'une unité sanitaire, pour le bien-être de la maternité et de l'enfance, il n'en est probablement pas de plus fructueux au point de vue de l'éducation, que les cliniques ambulantes de puériculture. Partout où elles ont été entreprises et poursuivies méthodiquement, les résultats ont été des plus encourageants. Dans la Beauce où elles sont en honneur depuis la création d'une unité sanitaire dans ce comté, la mortalité infantile a baissé de 26.3 par 1,000 naissances dans l'espace de trois ans.

Ces consultations de nourrissons auront toujours une assistance considérable, si à l'annonce du curé et au travail de l'infirmière l'officier médical, la veille, au soir, par une conférence au public, explique le but de ces cliniques et tout le bien qu'on peut en attendre. Une grave erreur à éviter dans ce travail, c'est de faire trop rapidement l'examen du bébé. Si on veut que les mamans reviennent à une clinique subséquente, il faut savoir les intéresser. A cette fin, il est de première importance de faire une inspection médicale complète de l'enfant même si on le croit en parfaite santé. D'ailleurs, en posant certaines questions à la maman, on trouvera toujours quelque chose de répréhensible soit dans la quantité, soit dans la qualité de l'alimentation qu'elle donne à son bébé. Les repas de celui-ci pourront être trop espacés ou trop rapprochés. Très souvent, l'enfant passera les douze premiers mois de sa vie dans la cuisine, exposé aux changements de température, aux odeurs de la cuisson et des lavages, aux mouches, aux animaux domestiques et ne bénéficiera du soleil et de l'air du bon Dieu que lorsqu'il fera ses premiers pas. Il n'y a pas de moments mieux choisis pour faire l'éducation des mères sur l'hygiène en général. Elles peuvent tout faire pour leurs petits pourvu qu'elles sachent pourquoi elles doivent faire telle chose et éviter telle autre. La pasteurisation du lait, la désinfection des bouteilles et des tétines, le danger des remèdes brevetés pour leurs bébés tels que les sirops calmants, le nombre des repas, leur intervalle, l'air et le soleil, la chaleur, le sommeil, le repos, le vêtement, toutes ces questions qui ont une importance si considérable pour la santé du nourrisson feront le sujet d'une petite causerie avec chaque maman. On enseignera aussi à chacune d'elles comment prévenir et guérir chez leurs petits, la gastro-entérite, les complications pulmonaires et les maladies contagieuses. On condamnera la vilaine habitude qu'on a dans les familles d'embrasser le bébé sur la bouche, de le faire passer d'une personne à l'autre pour le bercer ou le caresser. On avertira les mamans du danger qu'il y a de faire boire leurs petits dans une tasse commune. Le clinicien passera rapidement sur tous ces petits détails pour s'attarder davantage évidemment sur le régime alimentaire de l'enfant. L'alimentation au sein sera fortement recommandée. Il faudra faire comprendre aux mamans que pour un enfant qui meurt nourri au sein, il y en a dix qui meurent nourris au biberon. Il faudra aussi leur expliquer que l'alimentation maternelle comporte pour elle-mêmes de grands avantages. Enfin, on devra avec de la littérature qui traite du soin à donner aux enfants et aux futures mamans, leur donner par écrit le régime qu'on a jugé bon de prescrire au bébé. On aura grand soin de compliquer celui-ci le moins possible. Pour être effectives ces cliniques doivent avoir lieu au moins quatre fois par année dans chaque municipalité.

*Cliniques Pre-Scolaires*

Toute laborieuse que soit pour l'officier médical la tâche de donner

des conférences et des cliniques de puériculture, elle doit comprendre en plus le bien-être des enfants d'âge pre-scolaire. Cette période de la vie de 2 à 6 ans, est peut-être la plus négligée bien qu'elle soit la plus critique pour l'avenir de l'enfant. C'est l'âge où il affirme sa personnalité, développe des qualités et des défauts d'ordre mental et physique dont la répercussion s'étendra à toute sa vie. De l'orientation qu'on aura donnée à ses premières idées, de la correction qu'on aura apportée à ses défauts physiques dépendra en grande partie la valeur de cet enfant aux études et plus tard dans la société. C'est un fait reconnu que beaucoup de ces petits arrivent à l'école, porteurs de tares physiques et mentales. Ce sont des élèves médiocres et déclassés qui s'en vont plus tard joindre l'armée déjà trop nombreuse des nullités, quand ce ne sont pas des recrues toutes préparées pour nos cours juvéniles et nos maisons de correction. C'est le rôle de l'officier médical d'épargner à cette âge tendre ces irréparables catastrophes. Le meilleur moyen qu'il a à sa disposition, ce sont les cliniques pre-scolaires. Organisées de la même manière que les cliniques de bébés elles seront cependant moins nombreuses (1 par année dans chaque paroisse). Ici encore, on aura bien soin de les rendre intéressantes aux parents si l'on veut en obtenir des résultats pratiques. L'inspection médicale de l'enfant sera faite d'une façon méthodique et complète. On attirera l'attention des parents sur chaque défaut trouvé et pour en obtenir la correction, on amplifiera les graves conséquences qu'ils peuvent avoir sur le développement physique et intellectuel de l'enfant.

Est-il besoin de rappeler ici que c'est auprès de ces enfants que l'hygiène dentaire doit être poussée le plus activement. Attendre la période scolaire pour entreprendre cette campagne est une grave erreur. C'est vouloir construire un édifice sur des fondations dont la résistance est pour le moins problématique. Le phénomène de la dentition est bien antérieur à la vie de l'enfant. Il remonte à l'époque embryonnaire, à la valeur des échanges nutritifs qui s'opèrent entre la circulation foetale et la circulation maternelle. Si cette dernière est déficitaire en sel calcaire, il n'y a aucun doute que la carie dentaire apparaîtra très tôt chez l'enfant. Par contre, si le sang maternel est riche en sels de chaux, l'enfant a bien des chances d'y recueillir une bonne dentition. On voit tout de suite l'importance d'insister sur le régime alimentaire de la femme enceinte. Le problème de la dentition ne peut non plus se séparer de l'alimentation que le bébé recevra durant ses deux premières années d'existence. Cette vérité, l'officier médical devra l'avoir toujours présente à l'esprit, aux cliniques de nourissons. Commencée chez la mère, poursuivie chez le bébé, amplifiée chez les enfants d'âge pre-scolaire, une campagne d'hygiène dentaire a pour elle toutes les chances de réussir.

### *Maladies Contagieuses*

Cette période de la vie de 2 à 6 ans est aussi celle où les maladies contagieuses font le plus de ravages. Il est bien difficile de toutes les conjurer. La science médicale est encore désarmée en présence d'une épidémie de coqueluche ou de rougeole. La seule ressource qui reste à l'hygiéniste pour contrôler ces maladies, c'est l'isolement du

malade et la surveillance des contacts, de façon à pouvoir épargner surtout les enfants de 0 à 2 ans. C'est durant ces deux années en effet que la mortalité par rougeole est la plus élevée. Pour la variole, la scarlatine et la diphtérie, le problème est différent. Cette dernière entr'autre, est en train de disparaître avec la campagne de vaccination intense que les officiers médicaux ont organisée dans les unités sanitaires. Pour exercer un contrôle efficace sur ces maladies de l'enfance, l'officier médical doit avoir l'entière collaboration des médecins. Ceux-ci doivent rapporter tous leurs cas de maladies contagieuses, au bureau de l'unité sanitaire ainsi que leur prescrit la loi. A l'heure actuelle, dans le comté de Beauce, tous les enfants qui fréquentent les écoles ont été vaccinés contre la variole, et d'ici un an, nous caressons l'espoir que toute la population infantile de 6 mois à 10 ans aura subi l'épreuve de la vaccination contre la diphtérie. Nous avons inauguré celle-ci au mois de juillet dernier et le premier novembre, nous avons plus de 6,000 enfants qui avaient subi les trois injections à l'anatoxine Ramon. L'intérêt que la population a porté à nos efforts dans ce domaine est allée bien au-delà de nos prévisions. Plus de 86% des enfants qui se sont présentés à la première injection se sont rendus jusqu'à la troisième. N'est-ce pas là une preuve que le peuple se réveille à l'idée de l'hygiène et de la médecine préventive?

Le rôle du lait comme facteur de transmission dans les maladies contagieuses, est trop bien connu pour que l'officier médical puisse s'en désintéresser. Depuis longtemps il est reconnu que 80% des décès par gastro-entérite chez les nourrissons peuvent être attribués au lait contaminé. Par l'intermédiaire de son inspecteur sanitaire, l'officier médical doit exercer une surveillance étroite sur les producteurs et les distributeurs de cet aliment. Des échantillons seront transmis régulièrement pour analyse au Laboratoire du Service d'Hygiène et dans toutes les paroisses de son comté, l'officier médical ou en son absence, l'inspecteur sanitaire, donnera des conférences, distribuera des pamphlets sur la manière de produire du lait dans les meilleures conditions hygiéniques. Pour encourager la tuberculisation des animaux et prévenir la tuberculose chez les enfants, on conseillera aux consommateurs de donner leur préférence au lait venant de troupeaux passés à l'épreuve de la tuberculine.

### *Inspections Médicales Scolaires*

Le rôle de l'officier médical pour le bien-être de l'enfance, comporte d'autres obligations dont l'inspection médicale scolaire n'est pas la moindre. L'école, c'est le terrain par excellence des fécondités merveilleuses et des moissons abondantes. C'est la période de la vie où l'enfant n'a aucun préjugé aucune idée préconçue contre les théories de la science moderne. C'est là que l'officier de santé et son personnel doivent passer le plus de temps comme c'est là aussi qu'ils recueilleront les plus beaux fruits de leurs labeurs. Dans deux ans, les habitudes



hygiéniques de l'écolier seraient parfaites s'il ne prenait contact avec sa famille. Toutefois, pour atteindre à un résultat pratique dans ces inspections scolaires, il faut qu'elles soient faites au moins deux fois par année. Il faut en plus la collaboration quotidienne de l'instituteur ou de l'institutrice. A cette fin, l'officier médical doit saisir l'occasion de la visite de l'inspecteur d'écoles dans chaque paroisse, et se joindre à lui dans une conférence d'hygiène scolaire préparée spécialement pour les professeurs. C'est un excellent moyen d'obtenir des corps enseignants le concours si précieux de leurs causeries quotidiennes sur l'hygiène, aux enfants dont ils ont la charge.

Avec notre système de décentralisation scolaire, il est bien difficile pour le médecin d'une unité sanitaire de faire l'inspection complète de toutes les écoles de son comté. Pour l'accomplissement de ce travail, il doit se reposer largement sur l'initiative de l'infirmière. Il y a deux classes cependant qui doivent attirer son attention d'une façon toute particulière: celle des enfants qui entrent pour la première année à l'école et celle qui doit la quitter. Tous ces écoliers subiront un examen complet aux mains de l'officier médical. Les défauts trouvés seront pris en note et communiqués aux parents intéressés pour en obtenir la correction. Celle-ci est parfois assez difficile à réaliser. Cependant, la peur d'une maladie plus grave, la crainte d'un arrêt dans le développement physique et intellectuel, l'orgueil d'arriver à une belle stature, les bonnes notes, les compliments, les récompenses sont autant de moyens à la disposition de l'officier médical pour réaliser son but.

Pour obtenir la correction des défauts chez les enfants rien ne doit être négligé. Se fier uniquement sur le bon vouloir des parents pour cette besogne c'est se leurrer. Bon nombre en effet feront preuve d'indifférence pendant que d'autres—et c'est le plus grand nombre—resteront inactifs par suite de mauvaises conditions économiques. La pauvreté sera toujours, à n'en pas douter, le plus grand obstacle à l'avancement de l'hygiène. Peut-être aurons-nous avant longtemps un système d'assurances sociales pour parer à ce grave inconvénient. C'est un organisme qui fonctionne à merveille dans plusieurs pays, entr'autre, au Danemark. Mais en attendant cette panacée dont on nous dit tant de bien, l'officier médical doit voir à faire traiter tous les enfants pauvres. Là où il n'y a pas de cliniques dentaires et de soins médicaux gratuits, il devra solliciter d'un dentiste ou d'un chirurgien spécialiste, la faveur d'un traitement sinon gratuit du moins à un prix fort réduit pour tous les enfants malades appartenant à des familles pauvres. Il est bien rare que pareille faveur soit refusée par nos spécialistes en dentisterie ou en médecine à l'officier médical d'une unité sanitaire, qui a toujours travaillé pour mériter leur sympathie. Tous les enfants qui auront été trouvés 10% ou plus en-dessous de leur poids normal à l'examen médical, seront envoyés à la classe de nutrition où une diète spéciale et un régime de vie particulier, sera prescrit dans chaque cas. Quant aux enfants tuberculeux ou issus de parents tuberculeux, on devra les référer à la clinique antituberculeuse qui doit être tenue dans leur paroisse respective au moins une fois par année. On pourra alors, avec le consentement des parents, faire bénéficier du placement familial; ceux qui auront été trouvés non infectés. Les autres ne devront pas être admis à l'école à moins qu'il y ait une classe spéciale pour eux et encore, que la tuberculose dont ils souffrent ne soit pas à un degré trop avancé.

Il n'y a pas de milieu mieux choisi que l'école pour l'enseignement de l'hygiène sous toutes ses formes. Nous avons là une petite population des mieux disposées qui continuera dans les familles, le travail de santé que le



médecin ou l'infirmière aura commencé chez elle. Tout en insistant sur l'hygiène de l'habitation (orientation, éclairage, chauffage, lavage, balayage, cubage, ventilation, etc.), le médecin appuiera fortement sur l'hygiène personnelle. La propreté de la peau, du cuir chevelu, des mains, le soin des dents, la carie dentaire et ses conséquences, les amygdales et les végétations adénoïdes, les rhumes, les maladies contagieuses et les moyens de les éviter pourront faire le sujet d'une première causerie. L'hygiène de la vue et de l'ouïe, de la respiration et de la digestion, des organes éliminateurs, le vêtement, la tenue générale, les jeux, le repos, le rôle bienfaisant de l'air pur et des rayons solaires sont autant de sujets que l'officier médical et l'infirmière pourront développer dans leurs visites aux écoles.

C'est à l'école également que la lutte contre la tuberculose doit être poussée avec le plus de vigueur. Les enfants comprendront et retiendront toute leur vie l'influence meurtrière du crachat et de la toux dans la transmission de cette maladie, comme ils n'oublieront pas non plus que le soleil, l'air pur, la bonne alimentation, l'habitation salubre sont les grands ennemis de la tuberculose.

Les hôpitaux, les cliniques, les dispensaires, les sanatoriums, sont des armes indispensables dans la lutte contre la tuberculose. Ce sont des facteurs très puissants pour l'éducation des malades atteints de phthisie. Cependant, ils ne sont pas à la portée de tout le monde. Ils constituent en plus un lourd fardeau pour l'Etat et le contribuable, et ne réussiront jamais à exterminer la peste blanche, aussi longtemps que le peuple restera dans l'ignorance de l'hygiène préventive. N'étant pas préjugé, l'enfant comprendra tout de suite pourquoi il ne faut jamais se permettre de cracher par terre, pourquoi il faut se couvrir la bouche chaque fois que l'on tousse ou que l'on étourne. Il détestera autant l'alcoolisme et le logement insalubre, qu'il aimera l'air pur et les rayons bienfaisants du soleil. Ces notions de médecine préventive, l'enfant les répandra dans sa famille à son retour au foyer et c'est ainsi que nous aurons raison de la tuberculose chez nous lorsque deux générations d'écoliers auront reçu le même enseignement.

Dans toutes les écoles de son comté, l'officier médical doit donner des démonstrations pratiques sur les premiers soins à donner à un blessé. Au sortir de l'école, un enfant n'est pas excusable d'ignorer de quelle manière panser un accidenté et quelle ligne de conduite il lui faut tenir en présence d'un cas de brûlure, de submersion, de fracture, d'électrocution, etc.

### *Hygiène Sexuel*

Le problème si délicat et si débattu de l'enseignement de l'hygiène sexuelle à l'école, ne doit pas être indifférent au médecin d'une unité sanitaire. Plus que tout autre, il est en mesure de constater les tristes déchéances physiques intellectuelles et morales que le vice solitaire peut faire chez les enfants d'âge scolaire. Entre l'opinion qui veut cacher à l'enfant toutes les manifestations de la vie et celle non moins mauvaises d'un enseignement physiologique trop détaillé, l'officier médical doit en choisir une moyenne qui ne blesse la susceptibilité d'aucun. Données aux deux sexes séparément et suivant l'âge des enfants, des notions élémentaires sur la physiologie des organes génitaux en rapport avec le rôle qu'y joue l'imagination, ne pourront qu'apporter plus de bien-être à la gente écolière et lui épargner bien des chutes désastreuses. Dans ce domaine, ce que l'enfant ne pourra apprendre de ses parents ou de ses professeurs, il le puisera très souvent à des sources mauvaises pour

arriver à rien autre chose qu'à la perversion sexuelle. Cette triste déchéance, il appartient à l'officier médical de l'épargner aux enfants d'âge scolaire.

### *Société Médicale*

Un autre facteur qui contribuera plus que tout autre peut-être à diminuer le chiffre élevé de la mortalité infantile dans notre pays, c'est le relèvement général du niveau scientifique de la profession médicale. Il n'est pas nécessaire de faire une enquête prolongée pour constater qu'un trop grand nombre de médecins ont des notions de puériculture fort rudimentaires pour ne pas dire nulles. La manière avec laquelle ils font l'examen d'un bébé est loin d'être scientifique. Il s'ensuit que leur diagnostic est bien souvent erroné. On ne peut dire non plus que leurs méthodes de traitement soient des plus modernes. C'est là assurément une des raisons pour lesquelles on néglige bien des fois de faire demander un médecin au chevet d'un bébé. Cette façon d'un grand nombre de médecins d'examiner un nourrisson simplement à vue d'oeil, n'est guère prise en compte de nos populations. Nous avons là une des causes de certains traitements aussi dangereux que ridicules dont nos gens se servent dans le but de guérir leurs petits. Ce n'est pas en agissant ainsi que l'on fera disparaître les charlatans et les vendeurs de remèdes de toutes sortes.

Ce manque de compétence de la part d'un certain nombre de médecins est encore plus manifeste dans le domaine de l'obstétrique. Depuis 25 ans notre mortalité maternelle n'a pas diminué en proportion de notre mortalité infantile. Du reste, on constate la même chose dans presque tous les pays civilisés. Plus que les sages-femmes, certains médecins sont responsables de cet état de choses. En effet, il est bel et bien établi au Canada et aux Etats Unis, qu'après certaines maternités, ce sont quelques médecins qui apportent à notre mortalité maternelle la plus haute contribution. Il n'y a pas de doutes que la pratique de l'accouchement hâtif, les manoeuvres intempestives faites avec des instruments à demi stérilisés ou avec des mains dont la propreté laisse souvent à désirer sont responsables pour la plupart des blessures faites à la mère et à l'enfant, de même qu'elles sont la cause de presque toutes les septicémies chez les accouchées. Il est vraiment étrange de voir tant de femmes laisser leur vie dans l'accomplissement d'un acte aussi physiologique que celui de mettre un enfant au monde. Si telle doit être la rançon de nos mamans après les sacrifices déjà bien lourds de la grossesse, il y a lieu de craindre pour l'avenir, une forte diminution dans notre natalité dont le taux fait notre orgueil et notre espoir.

De toute façon il y a là un mal pour lequel il faut de toute nécessité trouver un remède. On oublie trop que l'accouchement est soumis à des lois physiologiques dont il est dangereux et même criminel d'entraver l'action. Cette vérité, n'y aurait-il pas lieu pour nos universités d'en pénétrer davantage le gros bon sens pour en faire une conviction mieux enracinée chez les médecins de demain? Est-ce qu'il ne serait pas à propos de renforcer les cours théoriques et surtout pratiques dans l'enseignement de l'obstétrique et de la pédiatrie? Je vous soumetts ces questions sans arrière pensée dans le but unique d'apporter mon humble contribution à l'étude d'un problème qui nous tient tous à coeur.

Quant aux médecins dont le travail et l'ambiance se prêtent mal au perfectionnement d'études commencées à l'université, je ne vois rien autre chose qu'une société d'études pour remédier à leur sort. De par ses fonctions publiques, et parce qu'il doit en retirer pour lui-même des profits immédiats et des avantages pour l'oeuvre de santé publique qu'il poursuit, l'officier médical se doit plus que tout autre de travailler à l'organisation et au bon fonctionnement d'une société médicale dans son comté. Ses relations avec le monde universitaire lui rendront plus facile la tâche de trouver des conférenciers de renom. Il pourra de temps à autre dans ces réunions d'études, avoir comme invités d'honneur des professeurs d'université ou des médecins de grande réputation dans le domaine de la pédiatrie et de l'obstétrique. La discussion amicale qui surgira dans ces assemblées sera un stimulant très puissant chez la profession médicale pour des études plus approfondies. Elle fera revivre l'ardente curiosité de l'étudiant pour les plus récentes découvertes de la biologie de la physiologie et de la thérapeutique. L'officier médical et les médecins se connaissant mieux s'estimeront davantage. Cette bonne entente et cette sympathie faite de collaboration réciproque est la plus sûre garantie d'un avenir des plus souriants pour le bien-être de cette partie, la plus belle la plus riche et la mieux aimée de notre capital humain; nos mamans et nos bébés.

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# The Medical Officer in Maternity and Child Welfare

DOCTOR JEAN GREGOIRE

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OVER 22,000 infants under one year die prematurely every year in Canada; the number of embryos alone amounts to nearly 7,000.

If to these are added the 1,300 mothers we lose each year from the effects of child-birth, we arrive at the sad figure of 30,000 lives lost every twelve months. To stir up public attention and create amongst all classes of society a well informed opinion on the necessity of protecting our mothers and children represents a colossal task which falls to the lot of every medical officer entrusted with the direction of one of our county health units.

Our maternal and infant mortality may be attributed to several factors similar to those which the Scandinavian countries and New Zealand had to control before obtaining their enviable success. In the first place is the ignorance of the mothers and of the general public in respect of the principles of hygiene; secondly, certain prejudices mingled with some kind of fatalism which seems closely related to the days of the less civilized world; thirdly, bad economic conditions; and fourthly, sometimes, medical attention of an inadequate quality.

To make a success of his educational campaign, the medical officer must be of unimpeachable character and have not only a university degree but a perfect understanding of the public mentality in each district, discernment, patience and an untiring devotion in the daily performance of his duties. He must, too, obtain the co-operation of the civil and religious authorities, the school teachers and school boards, the medical profession and the press.

## PROGRAMME

The success of any enterprise depends, in a large measure, upon the order and method employed. The medical officer should make his plans months in advance for his own activities and those of his nurses and sanitary inspectors; for lectures to mothers, school teachers, municipal councils and the general public; for the medical inspection of schools; for ante-natal and post-natal clinics and clinics for children of pre-school age; for dental and anti-tuberculosis clinics; for nutrition classes; for home visits; for the control of contagious diseases; the free distribution of serums and of antitoxins; for free vaccination against diphtheria and smallpox; for the distribution of literature, letters, and booklets, as well as for the sanitary inspections.

*Pre-natal Work*

Experience has proven that lectures to mothers given by the medical officer himself are more effective than when given by a nurse but the assistance of the nurse, as a home visitor is invaluable. The lectures should be in a simple language suited to the audience. They should deal with personal hygiene, the hygiene of pregnancy, diet, the complications to be avoided, the avoidance of excesses, the danger and treatment of syphilis, the care of the teeth, etc.

Too many mothers, at the loss of a baby, take comfort in the thought that death means the addition of one more cherub to the retinue of angels. During the last twenty-five years we have adorned Paradise with 250,000 such little angels. The medical officer should brand as absolutely false any such erratic interpretation of maternal obligations. And, in this mission, he may count always on the sympathetic co-operation of the parish priest. At every stage of their pregnancy, mothers should be taught that the family doctor will always be their best adviser. To have a proper educative value, these lectures to mothers should be given twice a year in every parish. Outside of these lectures, nothing appeals to mothers like a personal consultation.

*Post-natal Clinics*

Of all the activities carried on by the doctor of a sanitary unit for the welfare of mothers and children, none probably is more beneficial than the travelling post-natal clinic. In the county of Beauce, where clinics are being held regularly since the establishment of a sanitary unit, the infant mortality rate has dropped by 26.3 per 1,000 births in three years. These examinations of nurslings will always be well attended if, following an announcement from the pulpit and the nurse's visit, the medical officer explains, in a public lecture given the night before, the object of these clinics and their advantage. No better opportunity exists for the instruction of mothers on the importance of general hygienic principles. Here may be taught why they should do one thing and avoid another. The pasteurization of milk, the disinfection of bottles and nipples, the danger of patent medicines such as soothing syrups, the number of feedings and their spacing, the questions of air and sun, heat, sleep, rest and clothing—all are subjects of paramount importance to the nursling's health. The medical officer should show in a simple manner how babies must be protected from the chance of infection, etc. He should strongly recommend breast-feeding—emphasizing the fact that for the death of one breast-fed baby, ten die who are bottle-fed. Finally, literature dealing with the care of infants and pregnant women should be handed to mothers. To be effective these clinics should be held at least four times a year in each municipality.

*Clinics for Children of Pre-School Age*

This stage in the life of the child, that is, from 2 to 6 years, perhaps

has been neglected the most, although it represents the crucial period for the future of the child. It is the age when he affirms his personality, and develops mental and physical qualities and defects which will affect his entire life. His worth as a student, and later in society, will depend, in a large measure, on the direction given to his first ideas and on the correction of his physical handicaps.

Care must be taken to make these clinics interesting to the parents, if practical results are to follow. The medical examination of the child should be methodical and complete. The attention of the parents should be drawn to each deficiency found in the child, and, to encourage the correction of these handicaps, stress must be laid on the serious consequences these may have on the physical and mental development of the child. Here, too, personal hygiene and proper health habits may be developed and an educational dental hygiene campaign carried on. These clinics should be held once a year in each parish and be organized in the same manner as the post-natal clinics.

#### *Communicable Diseases Control*

It is during the pre-school period of 2 to 6 years of age that communicable diseases claim the largest number of victims. To check such disease as measles and whooping cough, the only expedient is to isolate the patient, to prevent contact with children under two years of age especially—or to isolate these youngsters. In smallpox, scarlet fever and diphtheria, the problem is not the same. The latter, especially, is now disappearing since the medical officers have instituted an intensive immunization campaign through all the sanitary units. At the present time all the school pupils in the county of Beauce have been vaccinated against smallpox, and we hope that a year hence all children between 6 months and 10 years of age will have been immunized against diphtheria. The latter vaccination was inaugurated in July, 1930, and by November, 1930, over 6,000 children had received the three injections of toxoid. The interest shown by the population in our efforts in this direction has far exceeded all our expectations. More than 86 per cent of the children who received the first treatment have also received the third one. The co-operation of the medical profession by reporting communicable disease to the medical officer is essential and is required by law.

The part that milk plays as a transmitting factor in communicable diseases is well known. Probably 80 per cent of the deaths attributed to gastro-enteritis in nurslings are due to contaminated milk. Through his sanitary inspector the medical officer should exercise, therefore, a close supervision over the milk producers and distributors. The medical officer, or the sanitary inspector in his absence, should give lectures and distribute booklets showing the production of milk under the best hygienic conditions possible. In order to encourage the tuberculin testing of animals and to prevent children from contracting



bovine tuberculosis, the consumer should be advised to give preference to milk from herds that have passed the tuberculin test.

### *Medical Inspection of Schools*

This is where the medical officer and his staff must exercise most of their activities, where also they will reap the best products of their labour as the school age child has no prejudice nor any preconceived ideas against the theories of modern science. The hygienic training for the pupil might be perfected in two years were it not for his contact with his family. The daily co-operation of the school teacher is necessary for success. The medical officer should take advantage of the school inspector's visit in each parish and associate himself with him in giving a lecture on hygiene in the schools, especially prepared for the benefit of the teachers.

It is a difficult task for the medical officer of a sanitary unit to make a complete inspection of all the schools in his county. For this work he has to depend largely upon the initiative of the nurse. However, two classes should receive his personal attention, that of the children entering school and that of those who are leaving. These pupils should be given a thorough examination. Defects should be brought to the attention of the parents for correction but it is still the duty of the medical officer to see that correction is accomplished. It is wrong to depend on the good-will of the parents for this task. In fact, some will remain indifferent, while others, and they are the majority, will do nothing on account of bad economic conditions. Poverty may always constitute the greatest impediment to the promotion of hygienic principles. We may have, in the near future, a system of social insurance that will mitigate this serious problem. But while awaiting this panacea, the medical officer should see that proper treatment is given to every destitute child. When there are no dental clinics, nor any free medical care, he should apply to a dentist or specialist and try to obtain, if not absolutely free treatment, at least reduced rates for children of destitute families. Our dental or medical specialists very seldom refuse to grant such a favour to the medical officer of a sanitary unit who has endeavoured, on all occasions, to earn their co-operation. All children whose weight is 10 per cent, or more, below normal, should be sent to the nutrition class where a special diet and particular regimen of living should be prescribed. Those suffering from tuberculosis, or with tuberculous parents, should be referred to the anti-tuberculosis clinic to be held in their respective parishes at least once a year. It may often be possible, with the parents' consent, to place those not yet infected in good foster homes away from the danger of infection. The tuberculous should not be admitted to school unless a special class has been organized for them, and even then, only if the disease has not reached an advanced stage.

There is no better place than the school for the teaching of hygiene

in all its forms. There will be found a most willing population who will pursue in the family the work undertaken by the doctor or nurse. As well as teaching the proper sanitary conditions of the home, location, lighting, heating, cleanliness, ventilation, etc., the doctor should stress the importance of personal hygiene. He should show how disease is spread and teach the elementary principles of infection.

It is also at school that tuberculosis must be fought most vigorously. The children should be taught the deadly influence of sputum and cough in the transmission of this disease as they must also be shown that the sun, pure air, good food and a sanitary home are the worst enemies of tuberculosis.

The medical officer should give, in all the schools of his county, practical demonstrations of first aid to the injured. A child cannot be excused, on leaving school, for not knowing how to dress a wound, how to apply first aid for a burn or scald, for a drowning, a fracture, or in case of electrocution, etc.

Finally the medical officer should do all in his power to encourage the medical society in his county. The *bonne entente* and sympathy, necessary for mutual co-operation and nurtured in the medical society, are most important factors in the welfare of the most esteemed part of human capital, mothers and babies.

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# The Stream Pollution Problem in Canada\*

## THE INTERNATIONAL ASPECT

GEORGE H. FERGUSON, B.A.Sc., M.E.I.C.

THE problem under discussion is of great value to the peoples of the United States and Canada. The residents of both countries possess, in the splendid immensity of the series of waterways through which so much of their common boundary passes, a heritage of inestimable value. Millions of people dwell in their watersheds. Along the banks of the rivers and the Great Lakes, communities, which a few years since were mere villages, are now, in population, in social and industrial development among the most important on the continent.

Until fairly recent years most municipalities and industrial plants discharged sewage and wastes into the nearest stream or watercourse without any treatment and probably without much consideration as to the effect of such discharge upon the stream or communities below. This condition was due not only to the fact that it was the easiest and cheapest way of getting rid of the sewage and wastes but also because the principles underlying sewage treatment were not generally understood when the earliest sewer systems were installed. Relatively little was known of the relation of public health to stream pollution. Only a few municipal sewage disposal plants had been constructed and these had been installed to prevent the creation of public nuisances within the municipalities themselves.

There are three major types of stream pollution against one or more of which protective measures may be applied. These are physical, chemical and bacterial. In sewage treatment there are types of works capable of dealing with each of these independently and any complete plant, that has been properly designed, performs a combination of these functions based upon the capacities, the limitations and the uses of the stream into which the effluent must be discharged.

It is recognized that surface waters cannot be maintained in a condition suitable for drinking purposes without proper purification. This is due to the fact that there are along the shores of nearly every lake or river many sources of contamination which from a practical standpoint are beyond control. It is also realized that a grossly polluted stream adjacent to any community constitutes a menace to public health in that it may be, and often is, used for drinking purposes by people in the community and by strangers who may not know that the stream is unfit for such use.

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At various times in recent years consideration has been given by the International Joint Commission and by the Governments of Canada and the United States to the prevention of the pollution of the international boundary waters.

Article four of the Boundary Waters Treaty of 1909 contains the following provision:

"It is further agreed that the waters herein defined as boundary waters and the waters flowing across the boundary shall not be polluted on either side to the injury of health or property on the other."

In August, 1912, the Governments of Canada and the United States requested the International Joint Commission to examine into and report upon the following questions:

"1. To what extent and by what causes and in what localities have the boundary waters between the United States and Canada been polluted so as to be injurious to the public health and unfit for domestic and other uses."

"2. In what way or manner, whether by the construction and operation of suitable drainage canals or plants at convenient points or otherwise, is it possible and advisable to remedy or prevent the pollution of these waters, and by what means or arrangement can the proper construction or operation of remedial or preventive works, or a system or method of rendering these waters sanitary and suitable for domestic or other use, be best secured or maintained in order to insure the adequate protection and development of all interests involved on both sides of the boundary and to fulfil the obligations undertaken in Article IV of the Waterways Treaty of January 11th, 1909, between the United States and Great Britain, in which it is agreed that the waters therein defined as boundary waters and waters flowing across the boundary shall not be polluted on either side to the injury of health or property of the other."

In the Boundary Waters Treaty of 1909, the boundary waters are defined as the waters from main shore to main shore of the lakes and rivers and connecting waterways, or the portions thereof, along which the international boundary between the United States and the Dominion of Canada passes, including all bays, arms, and inlets thereof, but not including tributary waters which in their natural channels would flow into such lakes, rivers and waterways, or waters flowing from such lakes, rivers, and waterways, or the waters or rivers flowing across the boundary.

These Great Lakes and connecting rivers are the sources of drinking water for the millions of population on their shores as well as for the millions engaged in travel or navigation on them.

The investigations of the sanitary experts of the International Joint Commission demonstrated that the waters in the neighbourhood of the

municipalities, within reasonable attainable distance for water supply on the lakes and their connecting rivers, were so polluted that they could not be used except after careful, expensive, artificial purification, and, unfortunately in some areas, especially on the rivers, the pollution was so great that even artificial purification would be a doubtful means of rendering the water safe.

Besides this, it was demonstrated that in the lanes of navigation, even on the open lakes, it would be necessary for following vessels to purify the water for drinking because of sewage discharge from preceding vessels.

The great mass of the pollution can be so treated as to make water purification by the cities a reasonably effective and safe procedure in the procuring of safe, potable water.

Extensive investigation along the line of the removal of pollution has been carried out. To bring all to fruition in the production of safe water supplies, joint action is needed. The work accomplished up to now and the conclusions reached as to corrective measures are so reasonable, and the open mind of the residents along the Great Lakes so well developed, that the time is opportune for this joint action.

Sources from which the international waters may be polluted are as follows: mine wastes, paper mill wastes, tannery wastes, chemical plant wastes, oily refuse, etc., and sewage from many municipalities.

Certain paper mill companies state that they are making arrangements for the recovery of fibre as a logical business improvement. They emphasize the fact that they are doing this of their own free will. However, when this subject was first brought to their attention there was intense objection to any change in their habits. After a little investigation they found that the recovery of valuable constituents of the wastes interested them in a business way.

The dangerous contamination of the international waters of the Great Lakes arises, of course, from the discharge of sewage from towns and cities located on their shores, from vessels navigating the lakes, and from surface wash from rains and thaws. The distance polluted water may travel depends upon its volume, the natural currents produced by the flow of waters between the lakes, as in the Detroit and Niagara rivers, and the currents induced by wind action. It was found that at the mouths of the Detroit and Niagara rivers serious pollution extended normally more than 10 miles into the lakes and at times for much greater distances.

Far too little has been done toward diminishing pollution of the water of the lakes by more complete purification of the sewage discharged into them.

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# The Technique for the Determination of Stream Pollution\*

A. V. DELAPORTE, B.A.Sc., M.E.I.C.

*Department of Health, Ontario*

**I**N an investigation of stream pollution it is necessary to establish, first, the normal condition of a stream before or above the point of pollution; this will include physical and chemical examinations of the water and bottom deposits and the normal flora and fauna, including bacteria; second, the source of pollution, the volume, physical and chemical properties of the polluting material, and probable minimum dilution in the stream; and third, the effect of this pollution on the normal condition of the stream, as shown by physical and chemical examination of the water and sludge deposits, and its effect on animal and plant life and bacteria.

The success of such an investigation depends almost entirely upon four different factors: (a) the selection of sampling points that will give samples truly indicative of prevailing conditions; (b) the collection of samples in such a manner that the result will not be vitiated by the manner of collection, handling, or storage until the examination has been completed; (c) the examination of the sample (this includes physical, chemical and microscopic examinations); and (d) the correct interpretation of the results—a phase of the subject not included in this communication which is limited to technique involved.

## *Selection of Sampling Points*

With regard to the selection of sample points, it is unnecessary to enter into all the details, but it is well to emphasize one or two features. A sample taken immediately below a riffle or fall will contain more dissolved oxygen than can be said to be normally present in the stream. Secondly, in our shallow northern streams when the nights are cold, the temperature of the water drops, decreasing the percentage of saturation of dissolved oxygen, but ultimately increasing, by solution from the air, the amount of dissolved oxygen which is present in the water. Conversely, it is true that in the morning, when the sun shines on the water the temperature rises rapidly, the determination of the dissolved oxygen indicates a higher percentage saturation than is warranted by the conditions. It is not uncommon in the early hours of the morning to find the water actually super-saturated. Another condition where this may occur is in a quiet body of water where there is enough plant food to ensure a heavy plankton growth, the oxygen given off by the plankton may be held in solution

\*Presented before the Section of Public Health Engineering, Canadian Public Health Association, 20th Annual Meeting, Regina, June, 1931.



and supersaturation occur. In one instance we had a saturation of 126 per cent. The last point with regard to the selection of sampling points is the effect on the biological oxygen demand and on the dissolved oxygen demand, of the inclusion of particles of sludge in the sample. In sampling near sludge beds this should be borne in mind. The slightest disturbance may cause an ebullition of gas which will carry particles of sludge into the supernatant liquor, vitiating the results.

### *Methods of Sampling*

The various methods of sampling are well set out in the various standard text books on this subject. We find most useful a small portable semi-rotary pump, mounted on a stand. The suction pipe consists of garden hose weighted on the end. The end can be lowered to any depth and samples can be taken with the greatest of ease. The nozzle of the pump is fitted with a jet with rubber tubing. The tubing is put to the bottom of the sample bottle and water is pumped through until the contents have been changed several times, eliminating any error from contact with air or with water from points over the sampling point. Similarly a definite volume of water can be pumped through a plankton filter, or even through a plankton net. Before pumping into the sample bottle it is necessary to pump two or three minutes to make sure there is no pollution remaining in the pump or suction line from preceding samples. This method is of no avail for bacteriological samples. For sampling at depth for bacteriological samples, our practice is to use a glass bomb with a tubulation. The bomb is evacuated, sealed, and sterilized in the laboratory. We lower it to the point from which sample is to be taken and by sliding a weight down the line we break the point of tubulation; the water then fills the vacuum. The sample is then transferred to another sterile container for transportation to the laboratory.

For securing samples of bottom deposits, a sampler perfected by Rawson of the Ontario Department of Fisheries, is excellent. It consists of a clam, the jaws of which are actuated by a strong spring. The jaws are held open by chains which are released by sliding a weight down the cord. The spring forces the jaws closed and a fair sample of the bottom will be enclosed and can be brought to the surface without difficulty.

### *The Examination of Samples*

No one determination will give full information. Where sewage or similar organic wastes are the polluting materials, the determination of the biological oxygen demand, the dissolved oxygen, and the temperature will give a fair picture of stream conditions; but where the polluting material is of such a nature that it is not favourable to biological development, other determinations must be used. Our standard practice in

a complete investigation involves a complete sanitary analysis, as well as the determination of total and suspended solids, acidity, alkalinity, pH value, and percentage of settleable solids in an Imhoff cone.

Table I gives a partial analysis of the polluting wastes most commonly encountered in Ontario. There are three other types of wastes which should be included, but were not readily available: (a) cannery; (b) distillery; and (c) dye factory wastes. An examination of this table shows that the white water from paper mills has a biological oxygen demand of practically zero, but it has very high suspended solids. The effect of these solids on a stream is not fully shown by the biological oxygen demand, but can be shown by the effect on the physical appearance and on the fish life in a stream. Similarly the effect of acid wastes from steel plants and dye works is not reflected in the results obtained by a sanitary analysis. This is also true of alkali wastes and wastes from chemical industries.

With this in mind, it is essential in closing, to emphasize the necessity for the collection of complete data before a proper picture of stream conditions is possible.

POLLUTION OF STREAMS

	Raw Sewage	Waste from paper plant (sizing)	Sulphite liquor	Waste from paper machine white water	Tannery waste	Dairy waste	Slaughter house waste
Nitrogen as:							
Free NH <sub>3</sub> .....	48.0	40.0	.....	19.2	19.2	28	112
Alb. NH <sub>3</sub> .....	30.0	38.4	12.8	19.2	25.6	19.2	96
Total N <sub>2</sub> .....	320.0	80.0	48.0	40.0	96.0	48	640
Nitrites.....	0.4	0.0	0.0	trace	0.	trace	0
Nitrates.....	0.0	0.0	0.0	0	0	0	0
O <sub>2</sub> consumed from permanganate.....	95	236	4,690	330	5,000	20	356
B.O.D. Primary.....	.....	140	500	0	900	15	.....
2 day.....	230	590	900	0	12,000	110	270
5 day.....	320	610	1,300	20	14,000	260	600
10 day.....	370	630	5,600	0	50,000	490	640
Cl. as chlorides.....	92	7.4	18.5	7.4	18.5	18.5	3,800
Total solids.....	880	2,500	35,260	2,000	40,140	720	13,440
Dissolved solids.....	600	2,380	35,180	180	29,320	440	9,860
Suspended solids.....	280	120	80	1,820	10,820	280	3,580
Imhoff cone %.....	0.9%	0.9%	0.05%	22.5%	1%	0.9%	5%
pH value.....	6.8	6.8	5.0	7.6	6.6	6.6	6.3

21ST ANNUAL MEETING  
CANADIAN PUBLIC HEALTH ASSOCIATION  
16TH ANNUAL MEETING  
ONTARIO HEALTH OFFICERS' ASSOCIATION  
MAY 25, 26, 27, 1932  
ROYAL YORK HOTEL, TORONTO

# Racial Origin in Vital Statistics\*

STUART MUIRHEAD

*Director of Vital Statistics, Provincial Department of Public Health,  
Regina, Saskatchewan*

Preceding consideration of Racial Origin in Vital Statistics the Chairman welcomed the members of the Association to Regina and reviewed the work accomplished since the last meeting—especially noting that of the Committee on the Definition of Still birth. He voiced the necessity for a handbook to guide in the classification of causes of death and expressed the hope that the Meeting would forcibly present a request for the preparation of such a handbook to the federal authorities. He also noted the increased interest taken in Vital Statistics by federal and provincial authorities.

**R**ACIAL origin is of vital importance, especially in these western provinces. At the present time the terms American and Canadian are prohibited from being used as designating racial origin. This is causing much irritation as judged from the view point and experience of Saskatchewan.

I appreciate very fully that it is desirable from the standpoint of ethnology, sociology, and criminology to trace the genealogy of the individual to its source, but in such a province as Saskatchewan, much harm is being done, and I believe action must be taken to remove the cause that is proving detrimental to our national life.

I have selected a number of quotations from letters that I have received on this question:

"I received a form concerning the Reduced Facsimile of a birth certificate from you some time ago, but I never got it answered before now and believe it is far too late now to consider it, but I would like to know why I have to register the children at birth as German just because Scribner seems to be a German name. Now their father was born in Nova Scotia, and their grandfather was born there, but I can't find out where the great grandfather was born, but it is believed to be in Canada. Myself, I am Scotch, and the children's father, along with his other brothers all enlisted in the Canadian army during the War, and fought against the Germans, and yet the children have to be registered to this nationality. Could you please give me any information regarding what I can do or if I can have the nationality altered on their birth certificates?"

"R. Ruller is the third generation born in Canada. Behind that is English, Irish and Scotch. If you can make me anything else but a Canadian, hop to it!"

"There is quite a strong feeling in regard to this matter in this district. I have had several cases where parents have refused to use any other words, especially with people from the United States. Their claim is that the American people are a nation and that their children should be registered as the descendants of Americans. In the case of Canadian parents their principal

\*Chairman's Address, presented at the Vital Statistics Section, Canadian Public Health Association, 20th Annual Meeting, Regina, June, 1931.

objection to the use of any other word than 'Canadian' seems to be that as their forefathers have lived in Canada for the past three or four generations, they are proud to be known as Canadians, and won't have their children registered as anything else."

"In answer to yours of the 26th inst., Mrs. Stewart's would be classed as French, as some time or other some of her ancestors came from France. With me—well, I don't know just what you would put me down as. I guess I would just be a mongrel of some sort. My father has Irish, Scotch and French blood in him. So now you can put me in whichever class you like. It doesn't make any material difference to me. If you can figure out from this what I am, other than Canadian, I will have to admit that you are an expert at doping out puzzles of this kind. I am like you. I claim to be a Canadian and I don't want to be called anything else. Canadian is good enough for me any day."

"From a circular sent out by your office I note that a Canadian is not recognized as a race. Don't you think it's pretty near time some definite ruling was made as to just how long a family had to be here, to give them the right to call themselves Canadians? This has got past being a joke with me. My people have been in Canada since 1776 and prior to that were, God knows how long in Pennsylvania. Now would you still call me a Dutchman? I have two boys; are they Dutch? Now personally, I think if a man's father was born here, that is enough to call him a Canadian. I would even concede another generation to these ardent Imperialists who owe allegiance to two flags, but let us have some ruling, or my people will still be Dutch after another hundred years."

"In reply to your letter re the attitude of the public in regard to the question as to racial origin in the birth records, I beg to state that the public as a whole consider that if the parents have been born in Canada or America, the children should be classed as Canadians or Americans. The chief difficulty is that where people have lived in Canada or America for several generations it is hard for the present generation to say where they originally came from."

The foregoing represents very fully the attitude of the public on this question in this province, and I have come to the conclusion, that as far as this province is concerned, the time has come when this very questionable procedure must cease.

My position is that every child born in this country, of whatever parentage, should be classified as a Canadian, and all lawful methods should be used to train the child to be proud of the fact that he is a Canadian, and therefore, the question compelling parents who have lived in this country for several generations, to endeavour to trace their ancestry back into the remote past, should be eliminated from our form.

The following are my reasons:

1. The present system makes for disintegration. One of the necessities for a progressive people is homogeneity. It is going to take a long time to accomplish this in Canada, but it is a goal that all true Canadians must set up to be reached, and we should begin now to propagate the principles that will ultimately attain this desirable result. We must begin with the children born in our country and train them in these principles, but if we, right from birth, inculcate in their minds

that they are either English, Scotch, Irish, French, German, Italian, etc., we shall never have a united people.

2. The present system is out of harmony with our status as a nation. Canada emerged out of the Great War a nation, and the other nations of the earth recognize this. With nationhood comes a race. There will never be a truly Canadian nation so long as we are divided by racial origin. The more quickly these origins are forgotten by those born in this country, the earlier will our people become one, and a race will grow up peculiarly Canadian, both from climatic, idealistic, socialistic, commercialistic, and other native surroundings. We are told in ethnology that there is no Canadian race. This then should be remedied and as Canada has demanded the status of a nation, so should she demand that her people be recognized as a race. No person would think of tracing back the origin of the people of England to Danes, Jutes, Normans, Saxons, etc. They are now a homogeneous people and the English race. The same process of race building must take place in Canada, and our children must be taught that they are Canadians and nothing else.

3. The present system is in opposition to the work of our educational department. Through it, the children of non-English speaking citizens are being trained in proper surroundings and the atmosphere thus created is rapidly producing young people with truly Canadian ideals and aspirations, but when these boys and girls marry and have their own children, what will they think when an official document is placed in their hands stating that the word Canadian must not be used. To me such action is a crime.

One of the most difficult classes we have to deal with in this province is the Doukhobor. In my official capacity I was summoned to a trial at Battleford between two of these people. It arose over the form of marriage of a couple. The bridegroom was a young Doukhobor who had withdrawn from the community class and become independent, but the bride belonged to the community class, and while they were married according to the Doukhobor custom in order to please the parents of the bride, the man wanted in addition, to be married by licence and by a clergyman. In his examination, this expression intensely pleased me. He stated that he was a Canadian, that he wanted to be married in the Canadian way and to have his marriage, and his children's births properly registered so that they would grow up Canadians. Then think of placing in his hands an official document stating that the word Canadian was not to be used! To me such action is absurd.

4. It creates a condition whereby hundreds of thousands of our citizens are deprived of any racial connection. This is illustrated in the case of my own wife. Her great-grandfather left the United States as he would not live under any other flag than the British. Together with the U.E. Loyalists, he made his home in the eastern townships of



Quebec, and the family home has been there ever since. We were in Montreal in 1901 when the census was being taken. When the enumerator came to our house he asked my wife her nationality. She stated she was Canadian, and in reply he stated there was no such race. She disputed with him and told him that she was nothing else. Finally he asked where her forefathers came from to the United States and she replied probably England. So he classified her as English. Such a condition is simply ridiculous.

In order to avoid being considered negative, I wish to present a positive suggestion. If the question of racial origin must be retained, as the Federal Bureau thinks it should, then let it be in a form along this line: "Racial Origin. (If Canadian or American is given, state if possible, previous racial origin)."

But I question very much the accuracy of our use of the term "racial origin". Is not the true racial origin according to colour? And should it not be described as Caucasian, Negro, Mongolian, Melanesian, Indian? What we call races—are they not really nationalities of the Caucasian race?

If such a classification was adopted it would save a tremendous amount of work.

Some one has described statistics as "the anatomy of the nation," as they indicate and describe the bones around which flesh, blood, muscles, nerves and vital organs are brought together in the national unity. Our section of this service is "the bookkeeping of humanity".

It is therefore a system of accounting and we all are aware of the fact that no great industrial or financial system could exist or be promoted without a detailed analysis of the costs of production and distribution. Vital statistics deal with the vital capital of the nation, and weekly, monthly, annually, and at other periods, seek to give to those who are charged with keeping that capital up to the standard a true accounting of the gains and losses, the forces actually impairing the capital, and those increasing it, numerically and otherwise.

Wherein does the true life of the nation lie? In its minerals, forests, lands, waters, flocks and herds? No! But in its healthy and contented men, women, and children. In other words, it is character that is the greatest asset of our nation, hence the importance of that service which is dealing with the momentous racial and national changes now taking place in human affairs.

No system of government is complete which does not provide for the proper collection and permanent records of its vital statistics.

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# Editorials

## THE NECESSITY FOR ADEQUATE APPROPRIATIONS

THE year that is passing has been one of testing for public health. No other department of government has had to shoulder such a large share of additional burdens. The sphere of public health activity has broadened with the economic depression and services have been required and extended that previously were not considered. The demands of the public for more personal service have been insistent and even the medical and nursing professions have approached health departments for assistance. While governing bodies have in the main been sympathetic to the increased work of the health department, in very few instances have they shown realization of the fact that a stinted public health expenditure now is poor economy—an economy to be paid for in sickness and death.

It is hardly necessary to recall the tragic stories of typhoid fever outbreaks in cities and towns where, through the curtailment of expenditures, necessary repairs or the installation of chlorinating plants were postponed. No municipality to-day can afford to risk the immediate financial loss occasioned by such an outbreak apart altogether from the loss of lives and the toll of sickness. Again, any real attempt to control tuberculosis demands adequate sanatorium accommodation. Yet in one of Canada's largest cities the accommodation is so inadequate that the best that can be done is to utilize beds in the city hospitals or add names to the already lengthy list of cases awaiting admission to sanatoria. To leave needy sufferers from tuberculosis without proper care in any municipality is to evidence a complete lack of appreciation of the menace of tuberculosis.

With due regard for the serious financial responsibilities which face all governments, municipal, provincial and federal, and with due respect for the burdens which those responsible must bear, it must be urged that appropriations adequate to the increased need be granted in order that full advantage may be taken of all that preventive medicine has to offer to relieve the burden of the taxpayer. A delay in providing necessary public health improvements, in applying specific immunization, in disseminating health knowledge through the medium of the printed page and the visiting nurse, delay in providing maternal, infant and child welfare facilities, tuberculosis and venereal disease services, etc., means robbing to-morrow of its citizens and increasing the economic emergencies of to-day.

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# PUBLIC HEALTH ENGINEERING

T. J. LAFRENIÈRE, C.E. AND A. E. BERRY, C.E., PH.D.

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## *The Engineer and the Association*

THE formation of the Section on Public Health Engineering in the Canadian Public Health Association has created an opportunity for engineers to associate themselves with public health activities. The initial meetings of the Section at the last convention, in Regina, were a decided success. The number of members of the Section at that time was, of course, limited. Plans have been under way for some time to bring in new members. As part of this plan a circular letter has been addressed to various engineers throughout the Dominion. A copy of this letter is printed herewith. It sets forth the aims of the Section and the advantages for engineers who may become members. Every effort will be made to make the engineering section useful not only to the individual members, but also to add strength to the Association itself. The circular letter follows:—

November 30th, 1931.

Dear Sir:

You are probably aware that recently a new Section on Public Health Engineering has been formed in the Canadian Public Health Association. This section has been created to fill a long felt want. It will now take its place with others in the advancement of public health activities in Canada. The object of the section is to provide discussion and an interchange of knowledge on all engineering matters in any way associated with public health. We believe this step will afford an excellent opportunity for engineers throughout the Dominion to associate themselves with the activities of

the Canadian Public Health Association.

May we draw your attention to the following with reference to membership in this association.

1. The Canadian Public Health Association is a purely Canadian organization. It deals with Canadian problems and merits the support of all within the Dominion.

2. The new engineering section of the Association makes it possible for engineers to meet together in convention, and to discuss public health matters of common interest.

3. Membership in the Canadian Public Health Association includes subscription to the CANADIAN PUBLIC HEALTH JOURNAL—a monthly publication.

4. Membership in the association will enable the engineer to take his rightful place in the public health activities of the Dominion. Public health workers comprise a much wider field than the personnel of health boards and departments. Nearly every engineer is doing work in Public Health. The support of the engineering profession will greatly strengthen and assist the usefulness of the Canadian Public Health Association.

5. A sister organization, the American Public Health Association, has a strong and important section of public health engineering. This new section will follow along somewhat similar lines and will be the only one in Canada devoted to public health engineering.

6. The editorial policy of the JOURNAL now provides that each issue will contain papers and articles of interest to the engineer. Such subjects as waterworks, sewerage, refuse collection and disposal, housing, milk control, and general sanitation are included in the topics for discussion.

The association holds annual conventions in the early summer. The next meeting

will be held in Toronto, May 25, 26, and 27, 1932, at the Royal York Hotel. A very excellent programme on public health engineering is being arranged.

On behalf of the association we extend to you a very earnest invitation to membership. The annual fee, including subscription to the JOURNAL, is but \$2.00. An application blank and a sample copy of the JOURNAL is going forward. Membership at

this time will extend to the end of 1932. A stamped addressed envelope is enclosed.

May we count on you for membership? Do not delay.

Yours very truly,

A. E. BERRY, Secretary, Public Health Engineering Section.

W. J. BELL, *President-Elect*, C.P.H.A.

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## PUBLIC HEALTH EDUCATION

MARY POWER, B.A.

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### *An Idea for a Exhibit*

M. F. YOUNG, R.N.,  
*Duncan, B.C.*

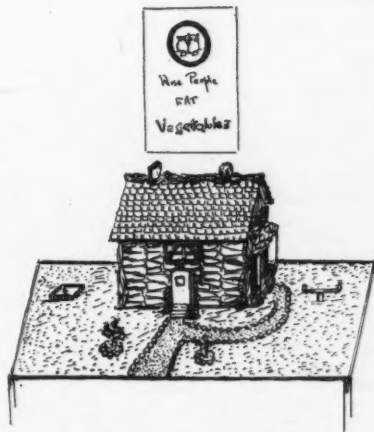
WHAT a problem it is to plan an exhibit for an occasion that comes around as regularly as a country fair. One's difficulty is usually to find something that is original and effective and at the same time inexpensive and easy to execute. After all, the work is wasted if the result is not arresting enough to be remembered; and, as for most public health measures, the children are the most responsive and promising audience to be considered.

We solved our problem this year by building a "vegetable house," and it is an idea that could be applied in any locality since it allows for much variation. The materials were all supplied through the generosity of local merchants and farmers, and the general effect was to present vegetables as attractive articles of diet.

In making the house, we collected as many varieties of vegetables as were in season and then incorporated

them where they would be most effective. A cardboard packing case, three feet by one and a half by two feet high, served as a foundation, with two pieces of cardboard to form a pent-house roof. Holes were cut in front for windows and doors, and these spaces were covered with cellophane.

The front wall was covered with



THE VEGETABLE HOUSE

carrots, cut lengthwise to resemble logs and sewn in place. The end walls were treated similarly, one with potatoes and the other with vegetable marrow; the rear wall was left uncovered since in our case it was unseen. Across one end there was a narrow verandah made by supporting a roof shingled with slices of parsnip on pillars that consisted of macaroni. Doors and steps were cut out of mangels—representing turnip in a diet—and the windows were outlined with strips of green beans, with pieces of curly cabbage for curtains. The corners and the spaces under the eaves were finished off with the corn husks overlapping and sewn in place.

The roof lent a modernistic touch with shaded shingles made from thin, crosswise slices of carrot arranged in overlapping rows. The gable was covered with beet tops and was surrounded by two brilliant chimneys—one a hollowed-out cucumber, the other a red pepper. A light inside glowed through the windows and made it seem a cosy place.

The house was set by itself on a table against a background covered

with green crepe paper, with the table top laid out to represent a garden. Fir tree needles made excellent grass, and a winding path of split pea and barley gravel was outlined with pieces of cauliflower representing white-washed stones. Parsley trees provided shade for some date children playing in a cream of wheat sandpile, and a gnarled potato made a delightful rainwater barrel.

Against the back wall of green, and above the house, was a poster showing a pair of brown owls over the statement, "Wise People Eat Vegetables," the last word of which was built up of various vegetables.

For the day and a half that the fair lasted, there was a constant ring of frankly admiring youngsters around the "little house," and for days afterward we heard all about it in the course of our school visits. From school and from the fair itself, accounts were very definitely carried home, even as in the case of one 8-year-old who said:

"But, Mummy, it is all right to eat cucumbers before breakfast. The nurses had them in their house"!

#### REPORTED CASES OF CERTAIN COMMUNICABLE DISEASES IN CANADA\* BY PROVINCES—OCTOBER, 1931.

Diseases	P.E.I.	Nova Scotia	New Brunswick	Quebec	Ontario	Mani- toba	Saskat- chewan	Alberta	British Columbia
Diphtheria.....	1	14	11	197	348	42	77	23	32
Scarlet Fever..	7	56	52	328	269	127	32	22	72
Measles.....	—	5	—	253	307	179	199	3	17
Whooping Cough.....	—	2	50	98	489	43	51	53	54
German Measles....	—	—	—	35	21	†	1	1	1
Mumps.....	3	8	—	29	313	59	60	8	41
Smallpox.....	—	—	—	—	19	—	23	4	—
Cerebrospinal Meningitis..	—	—	—	3	11	1	1	1	1
Anterior Poliomyelitis	—	6	5	439	31	3	1	6	3
Typhoid Fever	2	8	16	162	145	26	26	5	18

\*Data furnished by the Dominion Bureau of Statistics, Ottawa.

†Not reportable.

## NEWS AND COMMENTS

P. A. T. SNEATH, M.D., D.P.H.

### The International Association for the Prevention of Blindness

The International Association for the Prevention of Blindness met in Paris in November. One speaker pointed out how lack of immediate treatment so often aggravates industrial eye wounds and suggested as a solution a premium to workers seeking immediate medical attention. Dr. Cridland (Britain) advocated uniformity in statistics on the causes of blindness and suggested that an intensive study of such causes should be made before any other work in a campaign against blindness. Dr. Lewis (United States) showed cinematographic projections of Rare Forms of Cataract of a Parasitic Nature Observed in Fish, and indicated how this should stimulate the research for the cause of cataract in humans.

### A Model School

Hon. Dr. J. M. Robb, Minister of Health, Ontario, recently visited a unique school where the crippled, the emotionally handicapped, and those whose sight, hearing, or speech is impaired, as well as normal and especially gifted children, all receive special attention. The school is situated in Battle Creek, Michigan, and was presented to the Board of Education by W. K. Kellogg, Esq., in honour of his mother, Ann Kellogg, one of the pioneer teachers of the Middle West. The extra cost of maintenance is cared for by support from the W. K. Kellogg Foundation and the State of Michigan. The school represents one of the most distinctive advancements in the entire field of education. Provision is made for ultra violet radiation, special corrective mechanics, hydrotherapeutics, thermotherapeutics, gymnasium classes, for vocational training and for rest periods, etc. In an attractive dining room the students

act as hostesses and well balanced meals are served. In accepting this gift "the citizens have dedicated themselves to the task of removing as far as may be possible the scourges of childhood, disease, poverty, ignorance, to the end that every child may be free to enjoy his social heritage." This splendid contribution, costing in itself over \$500,000, may well serve as a new model for buildings devoted to the training of the child.

### British Columbia

THE British Columbia Medical Association is investigating a scheme of health insurance which has been offered by a syndicate.

Eighty-six nurses obtained the R.N. title at the recent examinations of the Provincial Graduate Nurses' Association.

The new wing of the St. Paul's Hospital was formally opened on October 28th by the Hon. H. S. L. Howe.

The suggestion of a metropolitan health board, to include all the municipalities of the Fraser Valley and lower mainland, is now receiving the serious consideration of the Provincial Board of Health. Dr. H. E. Young, Provincial Health Officer, has expressed himself in favour of the scheme.

### Alberta

TO determine the iodine content and its relationship to goitre, an extensive survey of the Alberta water supplies is being undertaken.

The Alberta Medical Association, through its Cancer Committee, has requested the Provincial Legislature to add cancer to the list of notifiable diseases.

### Saskatchewan

THE estimates passed at the last sessions of the Legislature providing for \$30,000 for maternity grants to May 1st, 1932, have already been overspent by \$9,000; this rate of expenditure would require \$140,000 for the year. Consequently all maternity grants have been discontinued, but the Government has continued to supply layettes directly to the mothers. Approximately 10 per cent of the mothers have applied for the grants this year.

### Manitoba

THE Armistice Day Address delivered by Dr. T. A. Rincok was a unique expression of touching tribute to the memory of the graduates in medicine who fell in the war and a striking challenge to maintain the principles for which they died. It is published in the November number of the Manitoba Medical Bulletin.

The new wing of the Portage la Prairie General Hospital was officially opened on November 3rd.

The Select Committee of the Legislature on the Study of Health Insurance and State Medicine met on Oct. 20th, 1931, when Dr. Harvey Smith and Dr. E. J. Boardman gave evidence.

Excavation work for the new three story brick and stone addition to the Brandon Hospital has started. The building will cost \$140,000.

Professor A. T. Cameron has been elected President of the Canadian Institute of Chemistry.

Dr. Ross Mitchell, newly elected President of the Manitoba Medical Association, retires from the editorship of the Bulletin, for the notable growth and progress of which he has been in the main responsible.

### Ontario

A NEW wing of the Alexandra Marine and General Hospital at Goderich was opened late in October.

Arrangements are being made for the provision of more sanatorium beds

in London, Hamilton, Weston, and Gravenhurst Sanatoria.

The new wing of St. Joseph's Hospital, London, was officially opened by the Hon. Dr. J. M. Robb and the Right Reverend T. J. Kidd, D.D., Bishop of London, on October 16th, 1931.

A disastrous fire occurred at the Ontario Hospital at Penetanguishene early in November. Seven men patients lost their lives. The cause of the fire has not been ascertained, but it is thought that it was due to a short circuit.

The Department of Public Health, Toronto, has opened clinics for diphtheria toxoid administration to the pre-school children. At the same time an active educational campaign for the use of toxoid is in progress, and the immunization is given to the school children. The Department aims to thus eliminate diphtheria as a cause of death in Toronto.

### New Brunswick

FIRE recently destroyed the private hospital of Dr. P. C. Laporte, Claire, N.B.

In a recent report of the American College of Surgeons, thirteen of New Brunswick's hospitals are placed in the completely approved class.

A new wing of Saint John General Hospital was opened for patients on October 16th. This is a decided addition to our hospital facilities.

Dr. Trevor Owen and Dr. T. A. Robinson, both of Toronto, spoke at extra-mural meetings in various centres during the month of October.

Dr. Geo. Melvin, Chief Medical Officer, is now on leave of absence



recuperating his health in California. Dr. Wm. Warwick is Acting Chief Medical Officer in his absence.

### Nova Scotia

**C**OLONEL (Dr.) John Stewart was made the recipient of a fine portrait, the work of Mr. John McGillivray, at a recent reunion dinner of the 7th (Dalhousie) Stationary Unit.

Nova Scotia mourns to-day the death of Dr. W. H. Hattie. While more fitting expression will appear on another page, it is meet to say here that Nova Scotia has lost one of her best citizens, a man whose name will long be remembered with deep affection and respect by those who knew him, not only in the Dalhousie University and in the Province, both of which he served so well, but in the whole field of Public Health in which he was an outstanding figure.

Miss Gladys Suliss, R.N., has been appointed Superintendent of the Pay-zant Memorial Hospital, Windsor.

### Prince Edward Island

**P**RINCE Edward Island has recently appointed the Hon. W. J. P. McMillan, M.D.C.M., F.A.C.S., as Minister of Health and Education. This augurs well for the Department of Public Health, as the doctor has been for a number of years Health Officer for the City of Charlottetown, and has always been in the forefront in promoting and assisting health work.

Construction of the new Prince Edward Island Hospital has been commenced; this, when completed next year, will compare favourably with any hospital on the continent. The most modern ideas in structure and in equipment will be incorporated into this building, which will doubtless be

a big factor in the promotion of health in this Province.

In July of this year, Public Health in Prince Edward Island was re-organized and now operates in a manner somewhat similar to the other provinces. The staff consists of a Chief Health Officer, who, besides directing the health activities of the province, superintends the Provincial Sanatorium and the collection of vital statistics. He has to assist him a full time medical officer, whose duties are mostly in the field of epidemiology. In addition there are three sanitary officers, two of whom are veterinary surgeons, one full time and one part time, who inspect milk and meats, and one full time sanitary officer for the City of Charlottetown.

The nursing division consists of a director of public health nursing and four full time public health nurses in the field, who work chiefly in the public schools of the province, but assist the Chief Health Officer with chest clinics at different centres of the province from time to time.

The Public Health Laboratory is situated at the Provincial Sanatorium and is in charge of a trained technician. Such work as is usually done in public health laboratories is done there.

The Provincial Sanatorium has accommodation for forty-eight patients and has a staff composed of a supervisor, five graduate nurses, and a dietitian. Since opening in June last, some ninety-three cases have been admitted. It is a modern hospital, well equipped, and should prove a big factor in lessening our mortality rate in tuberculosis.

With reference to venereal diseases control, we have a part time physician giving two clinics weekly, and who gives some two hundred treatments monthly.

## Books and Reports

D. T. FRASER, B.A., M.B., D.P.H.; R. R. McCLENAHAN, B.A., M.B., D.P.H.

**An Introduction to Practical Bacteriology.** By T. J. Mackie and J. E. McCartney. Publishers, E. & S. Livingstone, 16 and 17 Teviot Place, Edinburgh, 1931 Pages, 421. Price, cloth \$3.50.

The fact that the authors have deemed it necessary to preface a new edition, though only three years have elapsed since the publication of the second, is very encouraging. The advances in bacteriological knowledge have been rapid and have necessitated the rewriting of certain sections. It has been the aim of the authors to make the book practical. By that is meant that the emphasis is laid upon the more important methods used in routine bacteriological diagnosis and, which is more important, methods which have been found most serviceable in their own experience. That is one feature of the book which is very pleasing. There is no lack of critical judgment in the selection of the material. The book is primarily a guide, and not a text book of bacteriology.

On page 24 the inference is that diphtheria toxoid for active immunization is produced by heat rather than by formalin plus heat (37°C.). Though the testing of scarlet fever streptococcal filtrate is not easy, some reasonable approximation may be attained by titrating on the skin of susceptible humans if a standard toxin is used as a comparison. The authors, on the same page, refer to the dosage of toxin for active immunization in terms of skin test doses which implies that a titer of the value of the toxin can be determined. The dosage suggested is now considered as being very inadequate. The rapid method (Sabin) of pneumococcus typing might well be described.

I have found the book very useful and have recommended it for students. The authors are to be complimented.

**Typhoid Fever.** By William Budd. Published by Longmans, Green, and Co., London, 1873. 193 pages. Reprinted by the American Public Health Association, New York, N. Y. Regular edition \$5.00, Deluxe edition \$10.00

Public Health owes a debt of gratitude to the American Public Health Association for reproducing in such beautiful form Budd's original essay on Typhoid Fever, its nature, mode of spread and prevention, published in London in 1874. Here is a record of patient years of observation coupled with such critical correlation and analysis that, though developed before the germ theory of disease had been even enunciated and written ten years before the causative agent of typhoid fever was described, remains to-day almost as complete, almost as authentic as when it first appeared. The years have but confirmed the hypotheses developed by Budd and added the authority of the bacteriological laboratory to the rules which he wrote at the time for the prevention of typhoid fever. While the bibliophile may find in the printing and fine color plates a sufficient justification for the book occupying a place on his shelves, its value is by no means so limited. The book so reveals the patient careful search for the truth, and the clear logic with which the observations gleaned from varied fields of study, clinical, pathological and epidemiological, were analysed that its reading will well repay the practising physician, the public health administrator and the research worker. While adding to their knowledge of typhoid fever each of them may catch a glimpse of one of the brightest minds in Medicine and have demonstrated more clearly than before that real progress attends not only the laboratory experiment but also observations in the field and at the bedside—when analysed and recorded with critical judgment.

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